Standardised Stress Management Training: does it have an effect?

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Standardised Stress Management Training: does it have an effect?

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Abstract

Stress Management Training (SMT) may be an effective treatment for patients diagnosed with anxiety and depression. An SMT package has been given to active regular military personnel diagnosed with anxiety and depression under the care of the Department of Community Mental Health (DCMH), RAF Brize Norton. The SMT was not standardised and provided psycho-education and generic anxiety management.

This thesis describes attendees (n=90) of the unstandardised SMT. The unstandardised SMT was then standardised and its effectiveness was investigated by means of a Randomised Controlled Trial (RCT). The RCT compared participants (n=53) who received standardised SMT to those on the waiting list (control group) (n=45). Outcome measures used in the RCT were the General Health Questionnaire (GHQ-28), Beck Depression Inventory (BDI-II), Beck Anxiety Inventory (BAI) and Clinical Global Impression (CGI).

The results of the unstandardised SMT study showed that most attendees (91%) were diagnosed with adjustment disorders prior to the study. Most attendees (57%) met the threshold, as determined by the BDI-II, for a possible depressive disorder by the time they received the unstandardised SMT. This finding was replicated in the RCT where most participants (94%) were diagnosed with adjustment disorders prior to the study but most participants (81%) exceeded the threshold, as determined by the BDI-II, for a possible depressive disorder by the time they received the standardised SMT.

The results of the RCT showed that standardised SMT had a short term beneficial effect at six weeks in participants with high scores on the BDI-II but not in participants with high scores on the BAI. This effect was no longer present at 12 weeks.

This thesis does not support the continued use of SMT as a tertiary stress management intervention within the military or the wider adoption of standardised SMT to treat regular, active military personnel with diagnoses of anxiety or depressive disorders. This thesis recommends that the military may wish to test the effectiveness of providing different stress management interventions as a secondary stress management intervention instead.

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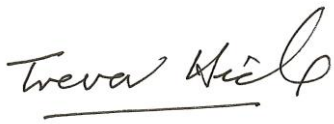
Declaration

I hereby declare that the work described in this thesis was carried out by myself under the supervision of Professors Nicola Fear and Neil Greenberg with the exception of those instances where the contribution of others has been acknowledged. None of the information has been used for any previous application for a degree. All sources of information have been specifically acknowledged by means of reference.



Trevor Hicks

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List of Abbreviations

ADMMH	Academic Department Military Mental Health
AE	Adverse Event
AMED	Allied and Complementary Medicine Database
APHC	Army Primary Health Care
APMS	Adult Psychiatric Morbidity Survey
BA	Behavioural Activation
BAI	Beck Anxiety Inventory Questionnaire
BDI-II	Beck Depression Inventory Questionnaire (version 2)
BNI	British Nursing Index
CGI	Clinical Global Impression Questionnaire
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CMHN	Community Mental Health Nurse
CONSORT	Consolidated Standards of Reporting Trials
CRF	Case Report Form
CRF (1 and 2)	Corticotrophin Releasing Factor (1 and 2)
CTU	Clinical Trials Unit
DCMH	Department Community Mental Health
DMLS	Defence Medical Library Service
DSM-V	Diagnostic and Statistical Manual of Mental Disorders (5^{th} edition)
EAP	Employee Assistance Programme
EMBASE	Excerpta Medica Database
GCSE	General Certificate of Education
GHQ-28	General Health Questionnaire – 28 item version
HDRS	Hamilton Depression Rating Scale
HIW	High Intensity Worker
HMIC	Health Management Information Consortium
HPA	Hypothalamic Pituitary Adrenal

HSE	Health and Safety Executive
5-HT	5 Hydroxytryptamine receptor
IAPT	Improving Access to Psychological Therapies
ICD-10	International Classification of Diseases (version 10)
ISRCTNR	International Standard Randomised Control Trials Number Register
KCMHR	King's Centre for Military Health Research
LFS	Labour Force Survey
LIW	Low Intensity Worker
MBARC	Military Behavioural Activation and Rehabilitation Course
MEDLINE	Medical Literature Analysis and Retrieval System Online
MOD	Ministry of Defence
MODREC	Ministry of Defence Research Ethics Committee
NICE	National Institute for Health and Care Excellence
NLP	Neurolinguistic Programming
PsychINFO	Database of abstracts in the field of Psychology
PSS	Perceived Stress Scale
PTSD	Post Traumatic Stress Disorder
RAF	Royal Air Force
RCT	Randomised Controlled Trial
RM	Royal Marine
RN	Royal Navy
SAC	Scientific Advisory Committee
SCAN	Schedules for Clinical Assessment in Neuropsychiatry)
SCL-90-R	Symptom Check List 90 Revised
SMT	Stress Management Training
SRRS	Social Readjustment Rating Scale
STAI	State Trait Anxiety Inventory

STATA 10	Statistics and Data software package - (version 10)
TRiM	Trauma Risk Management
UK	United Kingdom
US	United States

Chapter 1

Structure of Thesis

This chapter describes the structure and outline of this thesis.

Chapter **2** of this thesis will define the two main aims relevant to the understanding of the effectiveness of SMT in regular active UK Armed Forces personnel.

Chapter **3** (Introduction) of this thesis will explore definitions of the term "stress" and ways in which stress has been shown to have both physiological and mental health consequences. Concepts of resilience, burn out and the importance of achieving a balance between levels of stress and performance will be discussed. The causes of stress and occupational risk factors particularly relating to military service will also be explored. Adaptive and maladaptive coping mechanisms that individuals develop to cope with stress will be described. Common mental illnesses, which may be caused by stress, will be discussed. Models of treatment and illness recovery will be described. How stress can be measured will be discussed and the importance of patient satisfaction will be described.

Chapter **4** will describe a literature review of studies that have considered stress management interventions. The inclusion and exclusion criteria for papers that have been considered for this thesis will be discussed and the current gap in knowledge in relation to studies of military SMT will be identified.

Chapter **5** will describe the current structure and roles of the UK Armed Forces and the stress management and resilience policies that the military currently have in place. The structure of DCMH, RAF Brize Norton and its catchment area during the unstardardised SMT and standardised SMT will be compared and contrasted.

Chapter **6** will discuss the hypotheses and the methods used in the unstandardised SMT and standardised SMT described in this study. Statistical analysis will be described that were used in this study to test these hypotheses.

Chapter **7** describes the content of the unstandardised SMT, and the sociodemographic and occupational characteristics of military personnel who attended unstandardised SMT held at DCMH, RAF Brize Norton.

Chapter **8** will describe the Randomised Controlled Trial (RCT) designed to test the effectiveness of standardised SMT. This study will include an investigation of the sociodemographic and occupational characteristics of participants in the RCT and the main results.

Chapter **9** of this thesis concludes with a general discussion of the results of this study. The strengths, limitations and the implications of this study will be considered. Recommendations will be made regarding the future of SMT in the military and for future research.

Chapter 2

Study Aims

This study has two main aims relevant to the understanding of the effectiveness of SMT in active regular UK Armed Forces personnel:

1. To estimate the prevalence of anxiety and depressive disorders in attendees of unstandardised SMT.

2. To quantitatively examine the effectiveness of standardised SMT in treating regular active UK Armed Forces personnel who have been diagnosed with adjustment and depressive disorders.

Whilst UK Armed Forces have used, and continue to use, group Stress Management Training (SMT) to treat personnel diagnosed with a range of anxiety disorders, to date there has been no rigorous evaluation of the effectiveness of this intervention. This thesis will explore the effectiveness of a standardised SMT package for regular, active military personnel referred to the Department of Community Mental Health (DCMH) at RAF Brize Norton. The effectiveness of standardised SMT will be compared to waiting list controls by means of a Randomised Controlled Trial (RCT).

Chapter 3

Introduction

3.1 Introduction

This chapter describes:

- definitions of the term “stress”.
- a response-based model of stress.
- concepts of resilience and burn out.
- relationship of stress and performance.
- causes of stress and occupational risk factors.
- adaptive and maladaptive coping mechanisms that individuals develop to cope with stress.
- common psychiatric illnesses such as anxiety and depression which may be caused by stress.
- Measurement of stress
- Patient satisfaction

3.2 What is Stress?

There has been much debate about the definition of the term stress and Wilkinson called it *“an unreliable word best used sparingly”* (1). People complain of it, but scepticism persists about its meaning, its measurement and its management. So what is it?

The term stress is a form of the Middle English *'destresse'*, derived via Old French from the Latin *'stringere'* (to draw tight). In the seventeenth century, stress was used to mean hardship, straits, adversity or affliction (2). By the eighteen century, the use of the term stress had broadened to indicate "strain, pressure or strong effort". This was intended to reflect how stress was viewed by the scientific and engineering community and inferred an object's resistance to external pressure. Hinkle (1973) referred to this concept of stress in the biological and social sciences (3). This model was adopted by the social sciences and Cox (1985) pointed out that a purely scientific analogy was too simplistic (4). He stated *'we have to accept some intervening psychological process which does mediate the outcome…stress has to be perceived and recognised by man. A machine, however, does not have to recognise the load or stress placed upon it'*.

In the 1920's and 1930's, the term was occasionally used in biological and psychological circles to refer to a mental strain or a harmful environmental agent that could cause illness. Cannon (1932) used it to refer to external factors that disrupted what he called '*homeostasis'* (5).

Sutherland and Cooper (1990) highlighted that people who reported feeling stressed described a combination of unpleasant situations, and unpleasant inner personal experiences (6). These experiences may make it difficult to separate stress reactions from the actual causes of stress. However, stress itself was described as the body and mind's response to an event or occurrence, not the event itself.

Sutherland and Cooper (1990) also described several theoretical frameworks which have been used to describe different models of stress (6). These theoretical frameworks can be used to explain how and why exposure to certain conditions and situations can have an adverse impact on performance, health, well-being and quality of life.

The Encyclopaedia and Dictionary of Medicine, Nursing and Allied Health (7) suggested that stress is *'...the sum of all the non-specific biological phenomena elicited by our first external influences including damage and defence. Stress may be either physical or psychological or both. Just as a bridge is structurally capable of adjusting to certain physical stresses, the human body and mind are normally able to adapt to the stresses in of the new situations. However this ability has definite limits beyond which continued stress may cause a breakdown, although this varies from person to person…'*

A person-environment stress model acknowledges that a stress underload as well as a stress overload can as be perceived as stressful; that is to say either can act as a stressor. Levi (8) stated *'...the interaction between or misfit of environmental opportunities and demands, and individual needs and abilities, and expectations, elicit reactions. When the fit is bad, when needs are not being met, or when abilities are over or when under taxed, the organism reacts with various pathogenic mechanisms. These are cognitive, emotional and/or physiological and under some conditions intensity, frequency or duration, and in the presence or absence of certain interacting variables, they may lead to precursors of disease'.*

Work related stress has been defined by the Health and Safety Executive as *'the adverse reaction people have to excessive pressures or other types of demand placed on them at work'* (9). This definition of work stress is widely used in occupational situations and by the Ministry of Defence in their Health and Safety Handbook (2008) which addresses the issue of stress management in the military (10). The MoD recognises *'we all need some degree of pressure or stimulation to achieve our best performance but when the pressure becomes excessive work performance and the health of individuals can be adversely affected'*. This definition has formed the cornerstone of military stress management policy since 2008 and was incorporated into the RAF Stress Management Policy in the same year (11).

3.3 A Response-Based Model of Stress

There are two types of instinctive physiologically mediated stress responses. The first is the short term "fight or flight" response. This is a set of reactions described by Cannon (1931) which are mediated by the sudden release of "stress" hormones such as adrenaline, and nor-adrenaline (5).

The impact of acute and chronic stress on the hypothalamic-pituitary-adrenal (HPA) axis was reviewed by Leonard (2005) who described corticotrophin releasing factor (CRF) (1 and 2) as the main stress neurotransmitters which play an important role in the activation of the central sympathetic and serotonergic systems (12). The activity of CRF (1 and 2) is expressed through

specific receptors that are antagonistic in their actions and widely distributed in the limbic regions of the brain, as well as in the hypothalamus, and on immune cells. The mechanism whereby chronic stress, via CRF (1 and 2) induces activation of the brain's dorsal raphe nucleus, can induce a change in the serotonergic system and involves an increase in the 5 hydroxytryptamine (5HT2A) receptors and a decrease in the 5HT1A receptor mediated function. Such changes in the serotonergic system contributes to the onset of anxiety and depression. In addition, the hypersecretion of glucocorticoids that is associated with chronic stress and depression desensitises the central glucocorticoid receptors to the negative feedback inhibition of the HPA axis. This indirectly results in the further activation of the HPA axis. These HPA mediated hormones can speed up heart rate, increase blood pressure, and increase availability of energy stores and increase metabolism. These hormones also increase muscle strength and make the body resistant to infections and inflammation.

The second type of stress response is the general adaptation syndrome which was identified and described by Selye (13). He found that when people or animals are stressed a sequence of events occurs in three stages. The first stage is the alarm reaction when the sympathetic nervous system is activated and the 'fight or flight' response occurs. The second stage is resistance, in which defence and adaptation are sustained and optimal. If the stressor continues then arousal remains higher than normal. The third stage described is exhaustion and adaptive responding ceases as the ability to cope declines and

the stress response itself may become damaging. This deteriorating stress response may lead to illness.

3.4 The Prevalence of Stress

Determining the prevalence of stress in the general population can be problematic depending on the definition of stress and "caseness". The definition of "caseness" (i.e. whether or not a subject has the condition of interest) is important in psychiatric epidemiology where often, other than clinical impression, no objectively assessable measures exist to establish the presence or absence of a given syndrome. Williams (1980) highlighted the potential problems with case definition and case identification in psychiatric epidemiology (14).

An example of an attempt to measure the prevalence of occupational stress in the general population is the Labour Force Survey (LFS) (9). This is a survey of households living at private addresses in the UK. Its purpose is to provide information on the UK labour market which can then be used to develop, manage, evaluate and report on labour market policies. The LFS is intended to be representative of the whole population of the UK. The sample design currently consists of about 50,000 responding households in Great Britain every quarter, representing about 0.1% of the GB population.

The total number of estimated cases of work place stress is calculated by the LFS by combining new cases (those who became aware of their illness within the 12 months prior to the survey) with long standing cases. The LFS estimated that the total number of cases of self reported work place stress, anxiety and depression in 2011/12 were 428,000 (40%) out of a total of 1,073,000 for all self reported work-related illnesses. This was only second to cases of musculoskeletal disorders which were estimated to be 439,000 (41%) out of a total of 1,073,000 for all self reported work-related illnesses. As these numbers are estimates they may not differ significantly.

The Health and Safety Executive (HSE) cites the industries in the LFS that reported the highest rates of total cases of work-related stress (three-year average) as being human health and social work, education, public administration and defence (9). The HSE statistics do not rank these industries in order of the highest rates or define whether defence applies to military personnel, civil servants or both. Defence work related stress were estimated at 1,810 cases per 100,000 people working in the last 12 months. The main work activities attributed by respondents as causing their work-related stress, or making it worse, were work pressure, lack of managerial support and work-related violence and bullying.

A recent systematic review by Goodwin et al (2013) considered whether reports of occupational stress was higher in occupational studies rather than population based studies (15). Common mental disorders were found to be

more prevalent in occupational groups rather than the population based studies (which include those who do not work). This finding was inconsistent with the "healthy worker effect", which presumed that workers were generally healthy as they were working.

The "healthy worker effect" was previously described by Shah (2009) (16). Shah expected lower levels of psychological symptoms in individuals in employment. Goodwin *et al* (2013) however suggested that symptoms of common mental illnesses are over reported when participants know that they have been recruited to a study on the basis that they belong to a specific occupational group, as in nearly all "stress" surveys (15).

3.5 Stress and Performance

Gottschalk noted that stress is often used as a short-hand designation denoting psychosocial pressures which contribute to an illness (17). However stress has been shown to have both positive and negative effects in terms of performance as shown by figure 3.1.

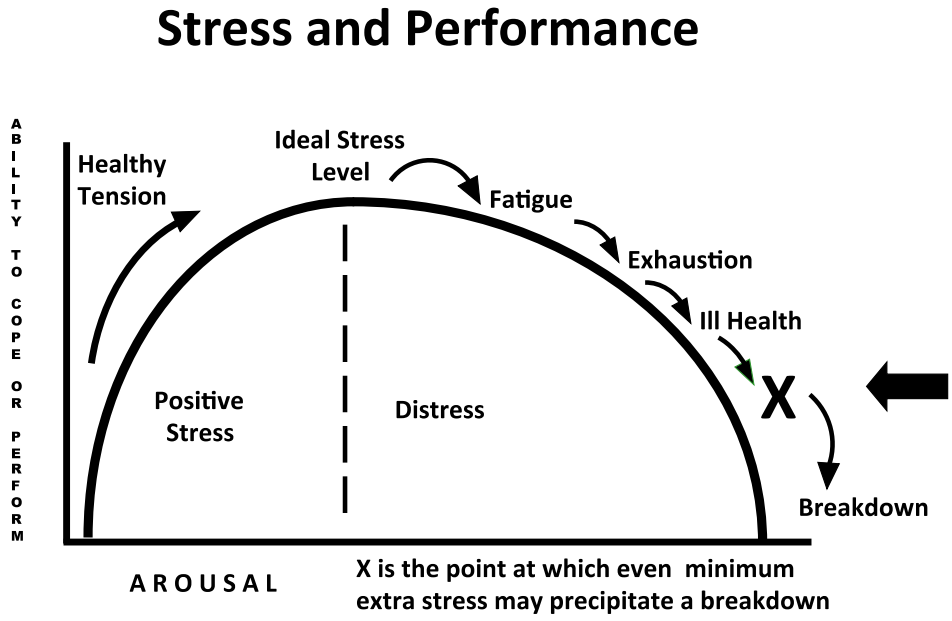


Figure 3.1 Stress and Performance (18)

Levi (1987) recognised that too little arousal or pressure can produce lethargy (*"the less you do the less you want to do"*) (8). At the same time, stress can be a motivator to growth, development and adaptation. Increasing levels of arousal can improve performance in producing healthy tension.

Selye described negative stress as “distress” and positive stress as “eustress”. He stated that stress *“can be a challenge and variety…it can be the spice of life”* (13). Quick pointed out that stress is inevitable but distress is not. Ideal stress levels produce normal tension, which produces optimum ability to cope or perform (19).

Yerkes (1908) found that if arousal levels are maintained for long periods without stress free periods or effective lifestyle balancing, performance starts to decrease (20). Those who suffer from work stress often complain of fatigue and anxiety and Shirom (2005) described the adverse physical effects where those suffering from work place stress seek advice from health care professionals (21). These contacts with health care professionals will often be for physical symptoms such as reoccurring headaches, backache and neck-aches. If stress continues then the next stage is exhaustion when sleep can become generally disturbed. The long-term effects of stress can be experienced as tiredness, lack of energy and exhaustion. Breakdown or psychiatric illness can then follow when even one small event can cause illness (*“the straw that breaks the camel’s back”).*

3.6 The Causes of Stress

The causes of stress have been included in this thesis as identification of the “stressor” and its minimisation or removal is important in stress management as an example of a secondary stress management intervention (one that

focuses on the stressors) rather that treating the effects of stress on an individual (tertiary stress intervention).

Stress can be caused by any number of life events, which can have particular meaning to a vulnerable individual. The type of events that could potentially cause stress was demonstrated in 1967 by the psychiatrists Holmes and Rahe (22). They examined the medical records of over 5,000 medical patients as a way to determine whether stressful life events might cause illnesses. Patients were asked to tally a list of 43 life events based on a relative score. A positive correlation was found between their life events and their illnesses. Their results were published as the Social Readjustment Rating Scale (SRRS) known more commonly as the Holmes and Rahe Stress Scale (22). To measure stress according to the Holmes and Rahe Stress Scale, the number of 'life change units' that apply to events in the past year of an individual's life are added and the final score gives a rough estimate of how stress affects health. The total life change unit score over the previous year was then compared to the likelihood of illness occurring during the following year. Their study suggested that there was a time delay between the occurrence of life change events and the onset of illness. The life change units are listed at Annex **G**.

Rahe and Arthur (1978) supported the link between stress and illness (23). Holmes & Rahe studied American citizens over a period of years to rate how stressful they found normal life-events. They included physical, mental and

emotional stressors in their research (22). They rated events on a scale between 0 and 200 and the results were then scored to develop the SRRS scale at Annex **G**. Each person was asked to circle an event if it has occurred in the last 18 months. The score is the accumulation of all the circled responses to produce a total score.

3.7 Occupational Risk Factors for Stress

A study by Goodwin *et al* (2013) concluded that common mental disorders were more prevalent in occupational studies (15). A follow up study by Goodwin *et al* (2015) found that serving military personnel are also more likely to endorse symptoms of common mental disorders compared to those selected from a general population study as employed in other occupations, even after accounting for demographic characteristics (24). As this thesis studies an occupational group (active, regular military personnel) occupational risk factors will be considered.

3.7.1 Environmental Conditions

Sutherland (1990) highlighted the general conditions in which an individual's work can be a contributory cause of workplace stress (6). She described how environments which are poorly maintained can produce a negative attitude amongst employees e.g. *'if management don't care then why should we'*. Similarly workplaces that are dull, untidy, badly designed or scruffy are likely to make

employees respond negatively to issues that arise at work. The workplace layout and ergonomics can also have a major impact upon an employee's efficiency, safety and general wellbeing. Employee participation in the design and layout of the workplace can improve morale in giving employees some control over their environment and can reduce this potential stressor. Staff facilities should be provided for rest, privacy, sanitary convenience, washing facilities and somewhere from where food and drink can be prepared or obtained. An employer is under a duty of care to consider environmental issues such as lighting, heating, ventilation, humidity and space. Often these issues are factors that exacerbate other stressful conditions. The employer needs to be aware of their duty of care in providing 'reasonable' conditions for their employees in order to meet statutory requirements. The active participation of employees can be an effective way of reducing physical and emotional stress from the work environment.

Military environments can be challenging by nature of deployments to areas where extremes of temperature are common and there are basic communal living and working arrangements. Pflanz and Sonnek (2002) carried out a study of 472 US military personnel who completed a 65 item self reported survey that included items involving reported life events, perceptions about occupational stress, and perceptions about the relationship between work stress and emotional health (25). More than one-quarter of this sample of military personnel reported suffering from significant work stress. 15% reported that work stress had caused them significant emotional distress, and 8% reported work stress that was severe enough to have damaged their emotional health. Generic work stressors were endorsed more frequently than military-specific stressors. Stress in this study was measured by

self report rather than by using objective measures of stress. Their findings supported previous research suggesting that work stress may be a significant occupational health hazard in the U.S. military.

3.7.2 **The Job**

Selye (1976) (13) showed that pressure can generate enthusiasm and energy but prolonged pressure without any respite can create nervous tension. If the pressure and nervous tension continues then 'burnout' can occur as described by Maslach (2001) (26). Yerkes (1908) described a balance that needs to be achieved between providing a challenge to staff and not overloading them (see figure 3.1) (20). Whilst it is reasonable for an organisation to set employees targets, standards and deadlines, problems can arise when those set by the employer exceeds the individual's ability to meet them. These can include quantitative or qualitative overload or underload.

Cropley *et al* (1999) examined the association between job strain and psychiatric morbidity using interview-based assessments of mental health. They defined job control as how much say the person had in the way they did their work and job strain as the combination of high job demand and low job control. They assessed the prevalence of neurotic disorder in high job strain (high demand, low control) and low job strain (low demand, high control) in school teachers, and compared these rates with data from individuals with similar educational qualifications from the National Psychiatric Morbidity Survey of Great Britain (27). They found that job strain in teachers was

associated with increased psychiatric morbidity.

The importance of military job strain, rank and mental health was investigated by Fear *et al* (2009) (28). They assessed whether job demand and job control have independent effects on psychological symptoms or whether job control modifies the effect of job demand. They also assessed whether rank modified associations between job strain and psychological symptoms. They found that job control, job demand, and rank were independently associated with Post Traumatic Stress Disorder (PTSD), common mental disorders, multiple physical symptoms, and fatigue, but not with severe alcohol problems. Job control and demand were found to have additive effects on psychological symptoms. Commissioned officers had lower risk of "caseness" for psychological symptoms than other ranks. Adjustment for rank had a negligible effect on the level of association between job strain and psychological symptoms. They reported that job strain and rank contributed independently to psychological symptoms in military personnel.

Overload or underload occurs when an individual does not feel capable of doing the prescribed task, or the task does not utilise the skills, ability or potential of the worker (29). Work overload and underload can result from an irregular flow of work that is outside the control of the employee. When the set tasks are unachievable the employee may develop a sense of helplessness. Similarly this may still happen when a target is reached but the employer increases the next target. Employees can easily feel defeated, undermined or useless especially when there is no mechanism for feedback between the employee and employer. French

(1973) showed that among British tax inspectors, both quantitative and qualitative overloads predicted levels of anxiety and depression (30).

Underload, or simply not having enough to do, can lead to boredom and apathy and Sutherland and Cooper (2000) showed that it could be a predictor of job dissatisfaction, anxiety and depression (29). Managers should consider several reasons as to why deadlines or targets may be unachievable. These include the training and experience of employees and the provision of resources and time. Overload or continual pressure from unrealistic deadlines or targets can lead to poor morale and result in high sickness rates or retention. This is particularly relevant to the military as its recent redundancy programme has led to fewer active, regular military personnel to carry out a similar tasking. This is in the context of continued high operational tempo in relation to the prolonged conflict in Afghanistan.

Stress from conflicting demands on time may be a sign of *'role conflict'*. The military system is based on discipline and has a rank structure which at lower rank limits an individual's ability to self determination. Orders are generally given to be obeyed without debate about the advisability of the decision made. Keane (1978) identified four types of role conflict (7);

(a) Person role conflict describes the situation where an individual would like to do it differently from that suggested by the job description.

(b) Intrasender conflict happens when the supervisor or manager communicates expectations that are incompatible for example when an employee is given an assignment without sufficient resources to complete the task.

(c) Intersender conflict occurs when an individual is asked to behave in such a manner that one person will be pleased with the results but another will not be satisfied.

(d) The final type of role conflict involves role overload when an employee may be assigned more work than they can effectively handle and, therefore, stress associated with role overload is experienced by the worker.

It may be that the time available is insufficient to deal with the work required. If the employee is expected to undertake several jobs simultaneously then the employee can suffer from increasing levels of stress. Role ambiguity and lack of control over a task are major potential stressors at work. One especially challenging situation is to ask an employee to be responsible for a task but to have no, or little, authority to effectively deal with the task. Clear indications of the level of responsibility and authority of individual employees can help to avoid this particular problem. Sutherland and Cooper (2000) described the importance of empowering employees to gain control over decision making as part of effective organisational stress management (29).

Although many studies have examined the biological phenomena that mediate the relationship between stress and illness, Roddenberry et al (2010) described the psychological variables that may mediate this relationship (31). Their study investigated the mediating effects of locus of control and self-efficacy in the relationships between stress, illness, and the utilisation of health services. Rotter (1966) described locus of control as the extent to which an individual believes they can control events affecting them (32) and Bandura (1977) described self efficacy as an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments (33). The study by Roddenberry et al (2010) suggested that participants who endorsed higher levels of stress also endorsed higher levels of illness, higher levels of external locus of control, and lower levels of self-efficacy.

The Health and Safety Executive (HSE) has produced management standards for work related stress (9). The standards define the characteristics or culture of the organisation where the risks from work stress are being effectively managed and controlled. The management standards cover six key areas of work design that if not properly managed are associated with poor health and wellbeing, lower productivity and increased sickness absence. The standards are:

Demands – this includes issues such as workload, work patterns and the work environment.

Control – how much say the person has in the way they do their work.

Support – this includes the encouragement, sponsorship and resources provided by the organisation, line management and colleagues.

Relationships – this includes promoting positive working to avoid conflict and dealing with unacceptable behaviour.

Role – whether people understand their role within the organisation and whether the organisation ensures that they do not have conflicting roles.

Change – how organisational change (large or small) is managed and communicated in the organisation.

Tackling work place stress by using the HSE management standards has been advocated as effective organisational stress management by Sutherland and Cooper (29).

The interface between differing departments in the same organisation can also be a potential source of stress as each will have its own priorities and ways of working. Reciprocal dialogue is usually needed between employer and employee to ensure that each understands the other's priorities and work parameters. Workloads should regularly be reviewed and whether existing deadlines are realistic. Tasks could be prioritised with the employee rather than be allowed to build up and the employee given autonomy over managing important aspects of their workload. Effective management should ensure the most suitable employee is allocated for a particular task e.g. some employees prefer a high throughput but low accuracy

whilst some prefer a low throughput but high accuracy. Effective line management has been recognised by the military to be an essential component of stress management in their stress management policies (11).

The issue of working hours was recognised by Sutherland and Cooper (2000) as an important component of stress management. (29). Issues such as length of shift, shift pattern and rest times need to be considered when assessing work place stress. The balance of shift pattern and social time spent with family must be addressed for each individual employee. Active, regular military personnel often do not have set working patterns which depend instead on operational tempo and are usually driven by task completion rather than set hours. Irregular working hours in the military was found by Pflanz and Sonnek (2002) to be a potential stressor in military personnel when compared to their civilian colleagues (25)

Sutherland and Cooper (2000) stated that travelling time can be enjoyed by an employee as an autonomous part of their work out of the office (29). In their opinion problems could arise when travelling time exceeded the amount of time that could be spent in the workplace, or impinged upon the time available for the remainder of work that needed to be completed. Waterhouse *et al* (2004) highlighted that travelling can be exhausting both physically and mentally and can reduce a person's performance (34). Military life can involve considerable travelling time due to regular detachments, deployments and postings. These periods of travel are often outside the control of active regular military personnel as they can occur unexpectedly and at short notice. The US study by Pflanz and

Sonnek (2002) showed that perceptions of exhaustion due to travel were also stressful in military personnel (25).

3.8 The Problems Associated with Stress

Stress was found by Shirom and Melamed (2005) to be associated with both physical and psychological problems (21). Individuals may use a number of adaptive coping mechanisms to alleviate their stress, However Price (2007) reported that some individuals develop maladaptive coping mechanisms that actually worsen the effects of the stress (35).

3.9 Adaptive Coping Strategies (Defence Mechanisms) That Help Reduce Stress

Price (2007) showed that people may use a variety of psychological strategies some conscious and some unconscious to try and help minimise the effects of stress (35). The study by Price identified three specific ego defences involved in Post Traumatic Stress Disorder symptomatology and these defence mechanisms are presented in Table 3.1.

Table 3.1 Adaptive Coping Strategies (Defence Mechanisms)

Ego Defences	Description
Splitting	Splitting is the failure in a person's thinking to bring together both positive and negative qualities of the self and others into a cohesive, realistic whole.
Rationalisation	Rationalisation offers a socially acceptable or apparently logical explanation to justify unacceptable impulses, feelings, behaviours and motives.
Projection	Projection is a theory in psychology in which humans defend themselves against unpleasant impulses by denying their existence in themselves, while attributing them to others.

Other defence mechanisms include denial, which is the avoidance of disagreeable realities by ignoring them or refusing to recognise them. This is probably the simplest and most primitive of all defence mechanisms. Intellectualisation is the excessive reasoning or logic used to avoid experiencing disturbing feelings. Displacement occurs if thoughts and impulses are directed towards an object. Conversion can convert anxiety into physical manifestations. In the short term, these psychological strategies can be used effectively to reduce the effects of stress on an individual.

3.10 Maladaptive Strategies That Maintain the Effects of Stress

The study by Price (2007) also identified four core schemas which were found to be predictors of Post Traumatic Stress Disorder symptomatology (35). These four schemas are presented in Table 3.2.

Table 3.2 Core Schemas Present in Maladaptive Strategies

Care Schemes	Description
Defectiveness	This schema refers to the belief that one is internally flawed, and that, if others get close, they will realise this and withdraw from the relationship. This feeling of being flawed and inadequate often leads to a strong sense of shame. Generally, parents were very critical of their children and made them feel not worthy of being loved.
Dependency	This schema refers to the belief that one is not capable of handling day-to-day responsibilities competently and independently. People with this schema often rely on others excessively for help in areas such as decision making and initiating new tasks. Usually parents who did not encourage these children to act independently and develop confidence in their ability to take care of themselves.
Enmeshment	This schema refers to the sense that one has too little individual identity or inner direction. There is often a feeling of emptiness or of floundering. This theme is usually developed from parents who are so controlling, abusive, or overprotective that the child is discouraged from developing a separate sense of self.
Failure	This schema refers to the belief that one has failed, will fail, or is fundamentally inadequate compared to others. Parents, who did not give enough support, expected the child to fail, treated him/her as stupid and/or never taught the child the discipline to succeed, usually cause this belief.

Maladaptive core schemas can maintain the effects of stress. The importance of avoiding negative cognitive appraisals has also been described by Shepherd and Wild (2014) (36). Maladaptive behaviours can also occur such as increased smoking, alcohol, caffeine intake and stopping exercise. A sufferer may not make any time for their usual hobbies and this can increase stress. These maladaptive behavioural strategies tend to worsen the effects of stress and can lead, as Shirom and Melamed (2005) described, to psychiatric illness (21). Such psychiatric illnesses are important to understand, as this thesis refers to participants in a study of the effectiveness of a standardised SMT to treat anxiety and depression, which may have resulted from stress.

3.11 Resilience

There have been several differing definitions of the term resilience. Psychological resilience has been defined by the shorter Oxford English Dictionary as an individual's tendency to cope with stress and adversity (2). Resilience has been described by Masten (2009) as an individual's ability to "bounce back" to a previous state of normal functioning (37). Rutter (2007) described resilience as being most commonly understood as a process, and not a trait of an individual where the experience of adversity can lead to better functioning (much like an inoculation gives one the capacity to cope well with future exposure to disease) (38). Zautra (2010) described resilience as the result of an individual being able to interact with their environments and the processes that either promote well-being or protect them against the

overwhelming influence of risk factors (39). Leadbeater (2005) described individual coping strategies and protective psychosocial factors such as good families, schools, communities, and social policies that make resilience more likely (40).

Military resilience in the face of adversity, such as overseas operational deployment, has recently been described by MacManus *et al* (2014) (41). Her findings suggested that the mental health of UK military personnel appears to have remained relatively resilient in spite of considerable exposure to traumatic events. The one stark exception to this is the high rates of alcohol misuse, which seem to be related to deployment. Her findings raise the possibility that there are important modifiable occupational factors such as unit morale, leadership, preparing combatants for their role in theatre, which may influence an individual's risk of developing psychiatric illness. Early intervention may equip military personnel with coping mechanisms, which prevent them from later becoming unwell.

3.12 Burnout

Burnout may be a both a precursor to stress and a consequence of stress. Stress can be accumulative over a period of time resulting in a *"burnout experience"* (physical and psychological ill-health adversely affecting work and social functioning) as described by Shirom and Melamed (2005) (21). Burnout is a psychological term for the experience of long-term exhaustion and diminished

interest. Burnout is not a recognised disorder in the DSM V (42), although it is recognized in the ICD-10 (43) and specified as a “State of vital exhaustion” (ICD-10 Z73.0) under “Problems related to life-management difficulty”. The most well-studied measurement of burnout is the Maslach Burnout Inventory (1996) (44). Maslach identified the construct of "burnout" and developed a measure that weighs the effects of emotional exhaustion and reduced sense of personal accomplishment. The Maslach Burnout Inventory uses a three dimensional description of exhaustion, cynicism, and inefficacy. Some researchers and practitioners such as Shirom and Melamed (2005) have argued for an "exhaustion only" model that sees that symptom as the hallmark of burnout. (21). The antithesis of burnout was described by Maslach (2008) as engagement (45). Engagement been has characterised by energy, involvement and efficacy, the polar opposites of exhaustion, cynicism and inefficacy.

Burnout has been included in this thesis as an example of the long term effect that stress can have on an individual. Recognition that an individual may be entering the burnout process is important in stress management as it provides an opportunity to intervene to halt the process and prevent burnout and mental illness. Sutherland and Cooper (2000) described such an opportunity as a secondary level stress management intervention (29). Such interventions are *“response directed”* and help employees recognise their response to stress and the symptoms of stress.

3.13 Psychiatric Illnesses Associated with Stress

If a person's coping strategies fail then maladaptive coping strategies can maintain or magnify the effects of stress and a person may develop a psychiatric illness as described by Shirom and Melamed (2005) (21). The Adult Psychiatric Morbidity Survey (APMS) in England (2007) (46) was used to determine the prevalence of psychiatric illnesses within the household population of England. The APMS estimated that in 2007, 23% of adults (aged 16 and over) in England had at least one psychiatric disorder and 7.2% had two or more disorders. The most common psychiatric disorders that are associated with stress are listed in the ICD-10 (43) and DSM IV (47) classifications below:

- **Acute Stress Reaction** (ICD-10) or Acute Stress Disorder (DSM IV) – A transient psychiatric disorder that develops in an individual without any other apparent mental disorder in response to exceptional physical and mental stress. Psychological symptoms usually subside within hours or days.

- **Adjustment Disorder** (ICD-10 or DSM IV) **–** A state of distress and emotional disturbance, usually interfering with social functioning and performance, arising in the period of adaptation to a significant life change or a stressful life event. These disorders can be characterised by anxiety, depression or both and generally last until the stressor resolves.

- **Somatisation** (ICD-10) or Somatic Symptom Disorder (DSM IV) – Multiple, recurrent and frequently changing physical symptoms of at least two year's duration. People with this condition are often seen by general practitioners. Their symptoms are psychological rather than physical in origin.

- **Hypochondriasis** (ICD-10) or Somatic Symptom Disorder (DSM V (42)) – A persistent preoccupation with the possibility of having one or more serious and progressive physical disorders.

- **Anxiety Disorders** (ICD-10) – includes phobias, obsessive/compulsive disorders, post traumatic stress disorder, panic disorder and generalised anxiety disorder. In the DSM V (42) classification anxiety disorders exclude obsessive/compulsive disorders and post traumatic stress disorder. The APMS estimated a prevalence of generalised anxiety disorder of 4.4% (46).

- **Depression** (ICD-10 or DSM IV) – A mental disturbance characterised by low mood, lack of energy (anergia) and lack of enjoyment (anhedonia). The severity of the depression can be mild, moderate or severe with or without psychosis. The APMS estimated a prevalence of 2.3% (46).

- **Malingering** (ICD-10 or DSM IV) – consciously fabricating or exaggerating the symptoms of mental or physical disorders for a variety of "secondary gain" motives, which may include financial compensation (often tied to fraud); avoiding school, work or military service; obtaining drugs; getting lighter criminal sentences; or simply to attract attention or sympathy.

- **Factitious disorder** (ICD-10 or DSM IV) is a condition in which a person acts as if they have an illness by unconsciously producing, feigning, or mental or physical exaggerating of symptoms.

- **Psychosis** (ICD-10 or DSM IV) – Serious mental illness characterised by thought disorder, delusions and hallucinations. Overwhelming stress can be an important but rare causative factor in the development of this condition.

3.14 Models of Treatment and Illness Recovery

Several models of treatment have been suggested to support a recovery from psychiatric illness.

3.14.1 **Cognitive Behavioural Therapy (CBT)** is a short-term focused psychotherapy originally designed to treat depression, but is now used for a number of other mental illnesses such as anxiety. It works to solve current problems and change unhelpful thinking and behaviours. The name refers to behaviour therapy, cognitive therapy, and therapy based upon a combination of basic behavioural and cognitive principles. A combination of cognitive and behavioral therapy is usually used during treatment. CBT acknowledges that there may be behaviors that cannot be controlled through rational thought, but rather emerge based on prior conditioning from the environment and other external and/or internal stimuli. CBT is "problem focused" (undertaken for specific problems) and "action orientated" (therapist tries to assist the client in

selecting specific strategies to help address those problems), or directive in its therapeutic approach. CBT is advocated by the National Institute for Health and Care Excellence (NICE) both for the treatment of anxiety (48) and depression (49). CBT would have been the "usual care" that active, regular military personnel with moderate to severe anxiety and depression would have received at DCMH, RAF Brize Norton in the absence of a group based SMT.

3.14.2 **Behavioural Activation (BA)** emerged as a separate psychotherapy after a component analysis of cognitive behavioral therapy by Jacobson *et al* (1996) (50). Their analysis found that the cognitive component of cognitive behavioural therapy added little to the overall treatment of depression. BA is a functional analytic psychotherapy and an example of Clinical Behaviour Analysis (CBA). Wesson *et al* (2014) investigated the clinical and fitness to work outcomes of a group BA programme for serving military personnel (51). They investigated 46 patients who were experiencing moderate to severe depression. The participants attended a 12-session Military Behavioural Activation and Rehabilitation Course (MBARC) at the Department of Community Mental Health (DCMH) Portsmouth. The primary outcomes used in their study were the Patient Health Questionnaire-9 (PHQ-9) and the patient's medical employability category. Clinical and statistically significant changes were found on the PHQ-9 between pre-course and 3-month follow-up. Preliminary findings suggested that MBARC is a clinically and occupationally effective treatment for depression in military personnel. Further research was recommended to investigate if BA delivered in a group setting would be effective in non-military settings and whether treatment

benefits are maintained in the longer term. This intervention is one of the few evaluations of a group treatment to have been carried out in active regular military personnel.

3.14.3 **Stress Inoculation Training** is a cognitive-behavioural approach providing people with added psychological resilience against the effects of stress through a program of managed successful exposure to stressful situations. The approach was developed by Donald Meichenbaum (1985) (52). The program usually comprises three phases:

1. The Conceptualisation Phase - learning to conceptualise and reconceptualise stress.

2. Skills Acquisition and Rehearsal Phase - including problem solving, cognitive restructuring and guided self dialogue. Meichenbaum advocated that stress cannot be effectively managed by adopting a 'cookbook approach'. Stressors need to be appraised and a range of coping options are available to the individual who can decide how best to employ them.

3. Application and follow through phase - staff are encouraged to write 'coping contracts' and undertake homework in order to ensure responsibility for their own wellbeing.

Saunders *et al* (1996) (53) conducted a meta-analysis to determine the overall effectiveness of stress inoculation training. The analysis was based on a total

of 37 studies with 70 separate hypothesis tests, representing the behavior of 1,837 participants. Their results indicated that stress inoculation training was an effective means for reducing performance anxiety, reducing state anxiety, and enhancing performance under stress. This approach has so far not been evaluated in active regular military personnel.

3.14.4 **Improving Access to Psychological Therapies (IAPT)** is a model of stepped mental health care provided in primary care in England (54). There are generally two types of practitioner in an IAPT service, low intensity and high intensity. Low Intensity Workers (LIW) are also known as: Psychological Wellbeing Practitioners, Graduate Mental Health Workers or Primary Care Mental Health Workers. LIW's use a 'guided self help' approach based on CBT techniques at step one and two of the IAPT service. LIW's help clients work through self-help work books, supporting them with computer CBT or delivering brief interventions like behavioural activation or psycho-education. LIW's see clients with mild to moderate anxiety and depression. LIW's are supervised by High Intensity Workers (HIWs). HIW's are also known as Psychological Therapists and provide more formal CBT to clients who have been diagnosed with more severe forms of anxiety and depression. HIW's provide step three IAPT based treatments. The various steps of IAPT care are presented at Table 3.3.

Table 3.3 IAPT Stepped Care

STEP 3 **HIGH INTENSITY SERVICE**	Depression Mild, Moderate and Severe	CBT, IPT Behavioural activation
	Depression Mild-Moderate	Counselling, Couples Therapy
	Panic Disorder	CBT
	Generalised Anxiety Disorder (GAD) Mild-Moderate	CBT
	Social Phobia	CBT
	Post Traumatic Stress Disorder (PTSD)	CBT, Eye Movement Desensitisation and Reprocessing (EMDR)
	Obsessive Compulsive Disorder (OCD)	CBT

STEP 2 **LOW INTENSITY SERVICE**	Depression Mild-Moderate	cCBT, Guided Self Help, Behavioural Activation, Exercise
	Panic Disorder Mild-Moderate	cCBT, Guided Self Help, Pure Self Help
	Generalised Anxiety Disorder (GAD) Mild-Moderate	cCBT, Guided Self Help, Pure Self Help, Psychoeducational Groups
	OCD Mild-Moderate	Guided Self Help

STEP 1: **PRIMARY CARE/IAPT SERVICE**	Recognition of Problem	Assessment/Watchful Waiting

Clarke (2011) described national data collected in England at the end of the second year of the programme which showed that it was on target in terms of the number of people seen (399,460 compared to a target of 400,000), the number of people who had moved off sick pay and/or state benefits (13,962 compared to a target of 11,100) and had recovery rates which were approaching expectation (an average of 40% compared to a target of 50%) (55).

3.15 Measurement of Stress

There are a number of ways that stress can be measured and various methods have recently been described by Figueroa-Fankhanel (2014) (56). Stress can be measured by using self reported life event questionnaires such as the Perceived Stress Scale (PSS) (57) or the Social Readjustment Rating Scale (SRRS) (22). Alternatively stress can also be measured by using clinical screening questionnaires such as the BAI (58), BDI-II (59) and GHQ-28 (60) to measure the psychiatric illnesses associated with stress. In the study presented in this thesis the clinical screening questionnaires BAI, BDI-II and GHQ-28 were used as measures of stress.

3.16 Patient Satisfaction

The importance of measuring patient satisfaction in those who receive psychoeducational based interventions was described by Barak *et al* (2001) (61). A patient satisfaction survey was undertaken in two adult psychiatric outpatient clinics. The anonymous self-report questionnaire covering demographic, setting and satisfaction with service variables was endorsed by 203 participants. Overall satisfaction with psychiatric care was high (79.8%) but none of the demographic or setting variables correlated significantly with satisfaction. Psychoeducation was significantly correlated with level of satisfaction with psychiatric care. Their findings emphasised the importance of providing psychoeducation in interventions provided to service users.

3.17 Summary

This chapter has defined the term “stress” and described a response based model of stress. The relationship between stress and performance has been investigated and its relationship to under or overload. The causes of stress and occupational risk factors have been explored and their relationship to military life. Adaptive and maladaptive coping mechanisms that individuals develop have been described together with the concepts of resilience and burnout. Common psychiatric illnesses, which may be caused by stress, have also been described. A number of models of illness recovery have been described which have been used to treat common psychiatric illnesses such as anxiety and depression. A number of measurements of stress have been described together

with the importance of assessing patient satisfaction in psychoeducational based interventions.

The next chapter will describe a literature review of papers, which have considered stress management interventions.

Chapter 4

Literature Review

4.1 Introduction

This chapter:

- Identifies the current gaps in knowledge regarding the effectiveness of military SMT.
- Describes a literature review of papers that considered stress management interventions.

4.2 Mental Health Training

Mental Health Training can take many forms but in this thesis the term is used to refer to psycho-education; that is to say the provision of information which recipients may find helpful that concerns psychological reactions and helpful/unhelpful coping behaviours. Wessely (2008) has argued that whilst mental health training is widely used particularly following trauma, good evidence as to the value of mental health training is lacking (62). He argues that whilst there is often an assumption that mental health training, like education, in general is usually considered a "good thing" this assumption should be empirically tested.

4.2.1 **Single Session Group Psychoeducation Interventions**

Kellett *et al* (2007) described the format of single session psychoeducation as 'high volume' and 'low contact': high numbers of attendees can be 'treated' at one sitting with sessions delivered in a more traditional didactic teaching style (63). Their results indicated similarities between outcomes measured on the BDI-II achieved by individual CBT (47% improvement), individual psychodynamic interpersonal psychotherapy (49% improvement) and group psychoeducation (62% improvement).

An example of a group psychoeducational intervention was the stress control programme developed by White *et al* (64). White described how an adult education stress control course could be delivered to up to 60 individuals at a time and could be used to treat large numbers of people with anxiety in primary care.

Brown *et al* (2008) also described all-day psycoeducational workshops to treat stress and improve self-confidence (65). The large-scale stress workshops contained up to 20–25 participants. These workshops allowed self-referral and were offered during the weekend in a leisure centre to reduce stigmatisation. Over 70% of attendees who referred themselves fulfilled criteria for an ICD–10 diagnosable psychiatric disorder. Brown *et al* found that improvements in outcomes for anxiety and depression were maintained at two years and concluded that brief interventions could deliver significant mental health improvements.

The UK military have used a number of psycho educational interventions which have aimed to be helpful to personnel operating in challenging environments. However, thus far there have only been a few studies that have evaluated their effectiveness. Greenberg *et al* (2009) evaluated stress education provided to 1559 Royal Naval personnel, throughout their career in the military, as an example of a stress management intervention (66). Their results suggested that only educational stress briefs which are relevant to the target audience may be beneficial and providing stress briefings without thought to their quality may contribute a waste of resources and was linked to non beneficial outcomes.

One of the few studies of psycho education in those with physical illness was carried out by Candy (2004) who conducted an RCT of a Mental Health Training intervention to aid recovery in infectious mononucleosis (67). It was found that a brief psycho educational intervention at diagnosis was acceptable to the participants and helped prevent the development of chronic fatigue. The study was limited by having recruited only 69 participants and further RCTs were recognised as being required to further evaluate the value of psycho education in those diagnosed with physical illness. This study was carried out on civilian participants rather than military ones and the target audience were suffering from physical illness rather than psychological conditions. The study was limited in its conclusions relating to the study described by this thesis.

These studies suggested that mental health training, stress education and psycho-education require further evidence to support their continued use. A

literature review was carried out to identify papers, which have considered stress management interventions.

4.3 Literature Review

This review aims to identify papers that have considered Stress Management Training (SMT) as a group based treatment for those suffering from common mental illnesses such as anxiety and depression.

4.3.1 Inclusion and Exclusion Criteria

Included in this study were papers that considered group based SMT for participants diagnosed with anxiety and depressive disorders. Studies that investigated a civilian population were included as were studies of regular, active military personnel.

Studies were excluded where participants in the study were diagnosed with psychotic disorders, illicit drug or alcohol related disorders, Post Traumatic Stress Disorder (PTSD) and flying phobia. Studies were excluded where treatment was designed to treat these specific disorders rather than anxiety and depression. Studies of reserve (non mobilised) military personnel were also excluded as Harvey *et al* (2011) found that they are likely to exhibit differing problems to active, regular serving military personnel (68). They found that reservists considered the transition between their military and civilian lives

difficult and that alternating between the two social settings and social identities often resulted in them feeling unsupported, misunderstood and poorly integrated with both sets of social networks.

An initial literature review was carried out on 22nd October 2012 in conjunction with the Defence Medical Library Service (DMLS). The DMLS is a network of five specialist libraries providing a comprehensive range of resources to support clinicians professional practice, research and career development in both operational and peacetime environments. All medical personnel working under the remit of the Ministry of Defence are entitled to use the DMLS and this service was utilised to produce this literature review.

A broad computerised database search was carried out using AMED, EMBASE, HMIC, MEDLINE, PsychINFO, BNI, CINAHL and HEALTH BUSINESS ELITE. No specific time period was defined in the search. Key words entered for the search were *"group based stress management".* 20 papers were identified from the search and citation searches were performed. However only one paper by Willert *et al* (2009) was found to be relevant to this study using this search strategy (69).

Two further searches were carried out on AMED, EMBASE, HMIC, MEDLINE, PsychINFO, BNI, CINAHL and HEALTH BUSINESS ELITE. No date range was defined in the search. The first search used the keywords "stress management" which returned 10775 results. A second search used the keywords "group therapy" which returned 44572 results. The results of these

two searches were then combined to produce 112 results. These 112 citations were then searched. 106 citations were found to include studies, which investigated clinical conditions such as PTSD, which were excluded in this study or interventions such as computerised CBT, which were also excluded in this study. Six key papers were identified (Cigrang *et al* (2000) (70), de Jong and Emmelkamp (2000) (71), Kitchiner *et al* (2009) (72), Koch *et al* (2006) (73), McEntee and Halgin (1999) (74), Pruitt *et al* (1991) (75)).

As the initial search was carried out on 22nd October 2012, the searches were repeated using AMED, EMBASE, HMIC, MEDLINE, PsychINFO, BNI, CINAHL and HEALTH BUSINESS ELITE for the date range 22nd October 2012 to 9th April 2014. A first search was carried out using the keywords "stress management". This search returned 12506 results. A second search using the keywords "training" returned 1126138 results. A third search using the keywords "managing stress" returned 2365 results. A fourth search using the terms "military OR army OR armies OR soldier OR sailor OR seaman OR airman OR airmen" produced 147583 results. The results of the first search ("stress management") and third search ("managing stress") were combined using the term "OR" to produce 14471 results. Combining this search ("stress management" OR "managing stress") with the second search ("training") produced 3243 results. Combining this search with the second ("training") and third searches ("managing stress") produced 66 results. Citation searches of the 66 results identified 17 papers but only one by Horrell *et al* (2014) (76) was identified which was relevant to this study. This study was included in the

results of the literature search. Table **4-1** reviews a list of papers identified by the literature search that have considered stress management interventions.

Table 4-1 Review of Papers, which have considered stress management interventions

Title, Authors, Journal	Sample	Intervention	Measures	Results	Comment
One-day cognitive behavioural therapy self-confidence workshops for people with depression: randomised controlled trial. Horrell *et al*. BJ Psych Journal (April 2014) **UK**	An open randomised controlled trial (RCT) waiting list control design with 12-week follow-up was used (trial registration ISRCTN26634837). A total of 459 adult participants with depression were randomised. 382 (83%) of participants were followed up.	One-day psycho-educational cognitive behavioural therapy self-confidence workshop	Primary outcome measure used - Beck Depression Inventory (BDI-II) scores of ≥ 14) Secondary outcome measures used were; Generalised Anxiety Disorder-7, Random Self Esteem Scale, Client Service Receipt Inventory, EQ-5D a measure of health related quality of life and Client Satisfaction Questionnaire	Follow up at 12 weeks, experimental and control participants differed significantly on the BDI, with an effect size of 0.55. Anxiety and self-esteem also differed. Of those who participated 25% were GP non-consulters and 32% were from Black and minority ethnic groups. Women benefited more than men on depression scores. The intervention has a 90% chance of being considered cost-effective if a depression-free day is valued at £14.	The study suggested that self-confidence workshops were promising in terms of clinical effectiveness, cost -effectiveness and access by difficult-to-engage groups.
A randomised controlled trial comparing an adult education class using cognitive behavioural therapy (stress control), anxiety management group treatment and a waiting list for anxiety disorders. Kitchiner *et al*. Journal of Mental Health, Cardiff (August 2009); 18 (4): 307-315 **UK**	131 subjects were invited for screening, 11 refused, 21 did not attend and 23 were excluded. 99 were screened and 73 (56%) were randomised.	RCT compared adult education class using cognitive behavioural therapy (stress control), anxiety management group treatment and a waiting list. Active treatments lasted 2 hours a week for 6 weeks. Stress control courses comprised power point slide presentations and a therapist/patient manual. Anxiety management course used a CBT model of psycho education. Stress control adult education course covered the nature, role and causes of anxiety	GHQ-28 Fear Questionnaire Life and Social Adjustment Scale Beck Depression Inventory II. Completed at initial interview, pre course, post course, 1 month, 3 months and 6 months	There were no significant differences between any of the main groups on the main outcome measure (anxiety subscale of the GHQ-28). Stress Control and Anxiety Management showed significantly greater mean reductions on the Fear Questionnaire than the Waiting List group post treatment but this difference was no longer present at one month follow up. There were no differences at any time point between anxiety management and Stress Control. The initial presence of depression was highly predictive of poor outcome.	This study did not support the routine use of Stress Control or Anxiety Management in group settings for individuals referred to secondary care with anxiety disorders. Further research would need to determine whether specific individuals would benefit from stepped care for the treatment of anxiety disorders.
Changes in stress and coping from a randomised controlled trial of a three month stress management	102 participants were randomised into intervention (n=51) or waiting list control group (n=51).	RCT compared three month group based stress management programme to waiting list control. Nine participants per group which met for eight three hour sessions	Perceived Stress Scale (PSS-10, range 0-40 points) Five dimensions from the Brief COPE questionnaire (range 2-8 points). Outcome measures were	Perceived Stress Scale (PSS-10 and the Brief COPE questionnaire at baseline and three-, six- and nine-months follow-up. Data were analysed with a univariate analysis of variance. On the PSS-10 from baseline to three months, the intervention group	Treatment is superior to the control condition in positively affecting perceived stress and positive reframing. When followed up, the gains achieved were maintained.

intervention. Willert *et al*. Scandinavian Journal of Work, Environment and Health (March 2009) **Denmark**		over three months. Groups were led by a clinical Psychologist and used CBT and stress psycho-education.	used at baseline, three, six and nine months follow up.	changed -6.45 (95% CI -8.25--4.64) points, compared to -1.12 (95% CI -2.94-0.70) points in the WLC group. The between-groups difference was -5.32 (95% CI -7.89--2.76) points, equaling a standardized mean difference of -0.84 (95% CI -1.27--0.42) favouring the intervention. One coping dimension, positive reframing, differed between the two groups. Here the intervention group changed -0.86 (95% CI -1.25--0.48) points from baseline to three months, compared to -0.18 (-0.58-0.22) points in the WLC-group. A between-groups difference of -0.67 (95% CI -1.24--0.11) points, equaling a standardized mean difference of -0.48 (95% CI -0.89--0.07) favouring the intervention. The gains achieved during treatment were maintained when followed up three months later.	
Occupational stress management; an inpatient group therapy program. Koch *et al*. Verhaltenstherapie. (March 2006) **Germany**	133 patients participated in the occupational stress management group compared to 156 patients that received standard symptomatic therapy only.	Occupational stress management group carried out over 16 hours using job focussed CBT methods compared to standard symptomatic therapy only.	SCL-90-R SF-12 on admission, discharge and three month follow up.	The intervention group showed a lower rate of job loss and a reduction in their intention of applying for early retirement.	This study focussed on occupational outcomes to stress management rather than clinical outcome measures relating to symptom severity.
Psychosocial effects of the BOOT STRAP intervention in Navy recruits. Williams *et al*. Military Medicine (Oct 2004) **USA**	801 recruits participated for the 9 weeks of their training. Recruits "at risk" for depression were randomly assigned to the intervention or non intervention groups, and the remaining recruits served as the comparison group.	10-15 'at risk' recruits assigned to the BOOT STRAP group which met for 45 minutes each week. The group was facilitated by Psychologists and used CBT techniques and generic stress management.	Beck Depression Inventory-II Perceived Stress Scale UCLA Loneliness Scale Sense of Belonging Inventory Coping Style Questionnaire Attachment Style Questionnaire BOOT STRAP weekly Report	The at-risk recruits who received the BOOT STRAP intervention significantly increased their sense of belonging, experienced less loneliness, used more problem-solving coping skills, and decreased insecure attachment by the end of recruit training. Percentages of recruits in the study successfully completing basic training were 84% of the comparison group, 86% of the intervention group, and only 74% of the nonintervention group.	This study did not include a power calculation or trial flow. Results suggest that the BOOT STRAP intervention improves recruit functioning, strengthens training performance, helps reduce attrition, and may have important implications for stress and depression interventions.
Stress management training for military trainees returned to duty after a mental health evaluation: Effect on graduation rates. Cigrang *et al*. Journal of Occupational Health Psychology, January 2000, vol.zis, 5/1 (48-55), 1076-8998; 1939-1307 (Jan 2000) **USA**	Participants in this study were 178 military trainees referred for a psychological evaluation from basic training.	Two 90 minute sessions of stress management in a group setting. Psycho-education was used together with generic anxiety management. The intervention was compared to usual-care control. Participants assigned to the control group received brief (up to 15 min) problem orientated advice and verbal encouragement from a Psychologist at the conclusion of the evaluation.	Graduation from basic military training.	94 participants received the intervention and 84 participants were controls. The study did not find that exposure to stress management information increased the probability of graduating from basic military training	This study evaluated the utility of stress inoculation training in helping reduce the attrition of a sample of Air Force trainees at risk for discharge from basic military training. This study did not use outcome measures that investigated psychological symptoms.

Implementing a Stress Management Training: Comparative Trainer Effectiveness Authors: de Jong *et al*. Journal of Occupational Health Psychology. (2000) **Netherlands**	155 males/females recruited through employers. Mean age: 38. Number assigned (dropout %). SMT -psychologists 53. (11%) SMT - paraprofessionals 51 (14%) controls 51 (20%)	Two Stress Management Training courses presented by Psychologists or by Para-Professionals. SMT consisted of eight 2.5 hour weekly group sessions. Sessions included psycho-education, problem solving, assertiveness training and generic anxiety management.	GHQ-12 Psychosomatic Complaints Questionnaire (PCQ) STAI (State Trait Anxiety Inventory) Survey of Recent Life Experiences (SRLE) Social Support Inventory (SSI) Scale of Interpersonal Behaviour (SIB) Utrecht Coping List (UCL) Eysenck Personality Qusetionnaire (EPQ) Life Events Scale (LES) Organisational Stress Questionnaire (OSQ)	Results showed favourable effects of the SMT (stress management training) program both in the short term and at 6 month follow up. Results showed no serious differences in effectiveness between trainers.	It was argued that, to be effective the SMT program did not necessarily have to be given by clinical psychologists but may instead be given by individuals from other professional orientations
Cognitive Group therapy and aerobic exercise in the treatment of anxiety. McEntee *et al*. Journal of College Psychotherapy (1999) 13:3 37-55 **USA**	70 participants were divided into four groups.	Cognitive group therapy only, Aerobic exercise only or a combination of Cognitive group therapy and exercise were compared to controls. Control participants participated in a weekly discussion group unrelated to the experiment.	State-Trait Anxiety Inventory (STAI), SCL-90-R and measures of perceived fitness and anxiety before and immediately following the study and at two month follow up.	All interventions were found to be effective but there was no additional effect from combining cognitive group therapy and exercise. Effects were no longer present after two months	This study used different outcome measures and had no power calculation. The study had insufficient sample size and power to show an effect.
Stress management in a military health promotion program: effectiveness and cost efficiency. Pruitt and Bernheim. Mil Med. (Feb 1991); 156 (2):51-3. **USA**	81 male/female US Army employees. Age range: 21-65 Number assigned (dropout %). Treatment 31/Control 33; dropouts; Not detected	Fitness and stress management groups	STAI SCL-90 Blood Pressure	STAI: pre test to post test between groups F (1.61) = 1.32 P = 0.254. SCI 90: pre test to post test groups F (1.62) = 5.21 P = 0.026 (d)	There was no statistically significant difference between groups for state anxiety. The lack of significance was primarily due to improvements in the control group members who also participated in the overall wellness program. There was a significant overall improvement for the combined groups in relation to all four variables (stress related physical symptoms, perception of anxiety, and systolic and diastolic blood pressure). The authors postulated that there was benefit of this program with overall low cost.

4.4 Results of Literature Review

The literature review identified two studies by Cigrang *et al* (2000) (70) and Williams *et al* (2004) (77) that investigated the effects of Stress Management Training (SMT) on graduation rates in military personnel. These two studies focussed on psycho-education as the intervention (SMT).

The US study by Cigrang *et al* (2000) described an RCT looking at the effect of stress training on graduation rates of military trainees. Participants assigned to treatment received two 90-minute classes held on separate days. The classes were taught alternately by the authors and focused on coping efforts in basic training. Classes were structured to cover specific topics and allowed interaction among participants and opportunities for interpersonal learning. A treatment manual was developed for use by the instructors. Stress was defined as a possible outcome of the balance between coping resources and current demands. Participants were encouraged to identify and share coping resources they had found helpful. Participants were provided with education and practice in relaxation training, problem solving, and self-instruction skills consistent with Meichenbaum's (1985) stress inoculation training model (52). The relaxation component included instruction in deep breathing and progressive muscle relaxation. A taught problem-solving approach to stress was advocated by having the class identify potential coping responses to real training situations faced by participants, discuss the potential consequences of the responses, and then choosing the best alternative to implement. This study found that stress training had no effect on graduation (70).

These results were in contrast to those found in a US study by Williams *et al* (2004) (77). The purpose of this study was to investigate the effects of Boot Camp Survival Training for US Naval Recruits. A (BOOT STRAP) intervention on stress, depression, situational events, interpersonal factors, and recruit training performance was used. Divisions of Navy recruits were randomly selected for the study and 801 recruits participated for the nine weeks of their training. On the third day of training recruits in the selected divisions completed a battery of questionnaires. Recruits were considered 'at risk' for depression if they scores highly on the Beck Depression Inventory (BDI-II) and Perceived Stress Scale (PSS). 'At risk' recruits were randomly assigned to the intervention or nonintervention groups, and the remaining recruits served as the comparison group.

The BOOT STRAP intervention consisted of a BOOT STRAP manual, which contained information on how to develop strategies for coping, sense of belonging and ways of reducing negative cognitive distortions. Recruits were expected to read the manual each week and guided weekly discussion meetings of 45 minutes duration were held for 10 to 15 recruits facilitated by a Consultant Psychologist. The 'at risk' recruits who received the BOOT STRAP intervention significantly increased their sense of belonging, experienced less loneliness, used more problem solving coping skills, and decreased insecure attachment by the end of recruit training. Percentages of recruits in the study successfully completing basic training were 84% of the comparison group, 86% of the intervention group, and only 74% of the nonintervention group. The results suggested that the BOOT STRAP

intervention improved recruit functioning, strengthened training performance, helped reduce attrition, and may have important implications for stress and depression interventions.

These studies considered graduation rates on military recruits rather than the treatment of active, regular military personnel who were diagnosed with anxiety and depression. Whilst the Williams *et al* (2004) study supported the use of stress training, the Cigrang *et al* study (2000) did not. These studies were carried out on US military rather than UK military personnel and the training between these groups are likely to be different. Whether mental health training, stress education or psycho-education is effective in UK active military personnel has remained unknown.

The literature review identified two studies; one by Kitchiner *et al* (2009) (72) and one by Pruitt *et al* (1991) (75) that did not show any effect from Stress Management Training (SMT). The RCT conducted in Cardiff by Kitchiner *et al* (2009) compared an adult education class using cognitive behavioural therapy (stress control), anxiety management group treatment and a waiting list for anxiety disorders (72). Individuals with DSM IV anxiety disorders were randomised to either a cognitive behaviour therapy adult education evening class (Stress Control - SC), anxiety management group treatment (AM) or waiting-list control. The stress control courses comprised power point slide presentations and a therapist/patient manual. They were delivered by two experienced mental health nurses with extensive experience of treating out-patients with Cognitive Behavioural Therapy (CBT) under supervision. Stress

control therapists had received training in the intervention. The AM group treatments were facilitated by two occupational therapists with 15–20 years experience of delivering AM in groups and training in the use of the AM manual. Both interventions comprised six two-hour sessions held at weekly intervals and written materials to take home. Two courses were held for each intervention. The SC adult education course covered the nature, role and causes of anxiety, and factors that maintain it; self-assessment skills; and a range of techniques to control physiological, cognitive, emotional, and behavioural signs of anxiety. The course leaders were referred to as teachers, and those who attended as students to emphasise the educational nature of SC. The AM course was designed to be more interactive with a broadly psycho-educational approach. A CBT model was used, with a strong emphasis on activity scheduling and goal planning, allied with training in a variety of applied relaxation techniques. Group processes were utilised by the therapists to engender a self-help ethos, whereby participants could share and learn from one another's experiences in a "safe" environment. No significant differences between any of the groups were found on the main outcome measures which included the General Health Questionnaire (GHQ-28) and the Beck Depression Inventory II (BDI-II). This study did not support the routine use of stress control or anxiety management in group settings in individuals referred to secondary care with anxiety disorders.

The study by Pruitt and Bernheim (1991) (75) investigated stress management in a military health promotion program. They studied 64 participants who were US Army active duty personnel stationed at the Pentagon in Washington.

Participants received generic health education and stress management over a period of six months as part of the US Army's FIT TO WIN programme. Participant's blood pressure was measured during the study period and stress on the State Trait Anxiety Inventory (STAI) and Symptom Checklist (SCL-90). There was no statistically significant difference at follow up between groups for state anxiety. The lack of statistical significance was primarily due to improvements in the control group members who also participated in the overall wellness program. There was a significant overall improvement for the combined groups in relation to all four variables (stress related physical symptoms, perception of anxiety, and systolic and diastolic blood pressure). The authors postulated that there was benefit of this program with overall low cost.

The findings of Kitchiner *et al* (2009) (72) and Pruitt *et al* (1991) (75) are in contrast to the findings of Willert *et al* (2009) (69) who investigated whether a group-based stress management intervention, based on principles from cognitive behavioural therapy, could reduce stress and alter coping strategies in an occupationally diverse population with extensive symptoms of work-related stress. Willert *et al* used a randomised wait list control design, which divided 102 participants into two groups: intervention and wait list control. The intervention was a three-month group-based stress management program. Outcomes measures were the Perceived Stress Scale (PSS-10, range 0-40 points) (57) and five dimensions from the Brief COPE questionnaire (range 2-8 points) at baseline and three-, six- and nine-months follow-up. The study found that treatment was superior to the control condition in perceived stress

and positive reframing. When followed up, the gains achieved were maintained at all study time points.

The findings of Willert *et al* (2009) (69) supported an earlier study by de Jong and Emmelkamp (2000) (71) which showed favourable effects of SMT both in the short term and at 6 month follow up. The Willert *et al* (2009) (69) study used the Perceived Stress Scale (PSS) (57) as an outcome measure rather than the General Health Questionnaire (GHQ-28) and the Beck Depression Inventory II (BDI-II) outcome measures used by Kitchiner *et al* (2009) (72). These two studies have measured different areas of improvement and may explain the differences found in outcome.

A study by de Jong and Emmelkamp (2000) (71) investigated participants who were randomly assigned to one of two Stress Management Training (SMT) conditions or an assessment only control group. The groups in the first SMT condition were led by external clinical psychologists. The groups in the second SMT condition were led by individuals referred to as paraprofessionals. Their results showed favorable effects of the SMT program both in the short term as well as at 6-month follow-up. The results showed no significant differences in effectiveness between trainers. It was argued that, to be effective, the SMT program did not necessarily have to be given by clinical psychologists only but may instead be given by individuals from other professional orientations. This study included participants with three out of five criteria for neuroticism, lack of social support, inadequate coping strategies, distress in assertiveness and unpleasant life events. Participants were not included because of a

diagnosis of anxiety or depression. The participants in this study are likely to have been heterogenous compared to the participants studied by Kitchiner *et al* (2009) (72) who were diagnosed with anxiety. Participants in the two studies were diagnosed with different mental health disorders and may help to explain the difference in the outcomes found.

The study by Horrell *et al* (2014) investigated participants in an open randomised trial who were assessed as depressed on the basis of BDI-II scores greater than 14 (76). A one day cognitive behavioural therapy self confidence workshop (the intervention) was compared to waiting list control. 459 participants were randomised and 382 participants (83%) were followed up at 12 weeks. The results of the RCT suggested that at 12 weeks the intervention was clinically effective at improving depression and anxiety. This study supported the findings of Willert *et al* (2009) (69) and de Jong & Emmelkamp (2000) (71) but not the findings of Kitchiner *et al* (2009) (72). This study was multi centred and focussed on participants who were at least 18 years of age and had depression as indicated by a BDI-II score of greater than 14. The Kitchiner *et al* study (2009) (72) investigated participants who were between 16-65 and satisfied the DSM-IV (American Psychiatric Association 1994) (47) for an anxiety disorder. The studies investigated participants with different clinical disorders and this may explain the differences in outcomes.

The studies identified from the literature review show conflicting findings as to whether SMT is effective in treating participants diagnosed with depression and anxiety. The study carried out in this thesis aims to investigate whether a

standardised SMT is effective in active, regular military participants diagnosed with anxiety and depression.

4.5 Summary

There is limited evidence of the effectiveness of Stress Management Training (SMT) in military personnel with anxiety and depression. The study described in this thesis aims to investigate whether there is evidence to support the effectiveness of SMT in active, regular military personnel.

The literature review highlights the lack of clarity about what constitutes SMT. There appears to be a particular gap in knowledge concerning the effectiveness of SMT in a military population.

As this thesis refers to the needs of military personnel, the next chapter will describe the current structure and roles of the UK Armed Forces. The role and catchment area of DCMH, Brize Norton will be described and the stress management and resilience policies that the military currently have in place.

Chapter 5

Structure of The Military & Military Stress Management Policies

5.1 Introduction

This chapter describes:

- The structure of the military.
- The ranks of active regular military personnel.
- The structure of DCMH, Brize Norton.
- The catchment areas covered by DCMH, Brize Norton during the unstandardised and standardised SMT.
- Current Military Stress Management and Resilience Policies.

5.2 Structure Of The Military

As this thesis refers regularly to military personnel the basic composition of the UK Armed Forces will be discussed. Greenberg (2008) previously examined the structure of UK Armed Forces in his thesis concerning the Psychological Effects of Peacekeeping Duties on United Kingdom Military Personnel (78).

The Ministry of Defence (MoD) is headed by the Secretary of State for Defence who is responsible for the formulation and conduct of defence policy. The MoD thus exerts the highest level of control over all three services: the Royal Navy (RN), the British Army and the Royal Air Force (RAF). The Royal Marines are part of the Royal Navy.

The Royal Navy is the senior service by virtue of the first naval action, which was recorded in 897. In 897 the Wessex Saxon Fleet of King Alfred found six Viking longships that had been raiding the south coast of England at an unnamed estuary. After successfully attacking three of the Viking vessels, the heavy Saxon ships became grounded as the tide ebbed. A land battle then ensued between the crews of the beached Danish vessels and the grounded Saxon ships. The Danes were eventually able to float off before the heavier Saxon ships and they escaped. But the depleted and wounded Vikings were in no condition for the voyage home and only one ship of this ill-fated Viking raid got back to the Danish colony in East Anglia.

The Royal Navy as of early 2013 consisted of 34,010 trained personnel (including 6580 Royal Marines Commandos - elite amphibious warfare troops) (79). The Royal Navy has a number of major surface vessels (such as frigates), minor war vessels (such as patrol craft or mine hunters), submarines and the Fleet Air Arm operates helicopters in support of naval operations. Major vessels are usually commanded by a Captain (equivalent to an Army Colonel) or Commander (equivalent to an Army Lieutenant Colonel) with smaller vessels being led by Lieutenant Commanders (equivalent to an Army Major). Non commissioned ranks range from rating, leading hand, petty officer, chief petty officer and warrant officer. Ratings is the most junior rank and includes able seaman (equivalent of an army private), leading hand (equivalent of Corporal). Warrant Officer is the most senior non commissioned rank. Logistical support is provided by the Royal Fleet Auxiliary - merchant seamen who operate alongside the Royal Navy in all

theatres of operations. There are small reserve elements of naval personnel (Royal Naval Reserve and the Royal Marines Reserve), which provide support to the regular forces from time to time. Royal Naval reservists are not considered in further detail as they were excluded from this study.

The British Army, formed in 1661 consisted of 91,320 personnel as of early 2013 (79). The organisation of the Army is complex but the Regimental system is the most stable building block. Regiments have one or more battalions, each about 700 strong and most usually commanded by a Lieutenant Colonel. The battalion is broken down into companies of about 100 personnel each commanded by a Major or a Captain. Companies are composed of three platoons (or troops) of about 30 personnel and commanded by a Lieutenant; these can be further broken down into sections of eight personnel commanded by a corporal. Regiments are formed into brigades, or larger divisions, depending on the scale of the operations they undertake. Corps (such as the Royal Army Medical Corps, the Army Air Corps or the Royal Electrical Mechanical Engineers) provide specialist personnel to support the brigades. The roles of British Army personnel are varied but include infantry, cavalry (which operate armoured fighting vehicles), artillery, medical, intelligence, logistics and engineering. Non commissioned ranks range from private, lance corporal, corporal, sergeant, staff sergeant and warrant officer 1st and 2nd class. Private is the most junior rank and warrant officer 1st class is the most senior.

The Royal Air Force (RAF) is the oldest independent air force in the world, having formed on 1st April 1918 with the merger of the Royal Flying Corps (previously the air arm of the British Army) and the Royal Naval Air Service. Regular active RAF personnel numbers as of early 2013 were 37,200 (79). The RAF operates from bases called stations, which have a number of wings, each composed of a number of squadrons. Most squadrons are commanded by a Wing Commander (the equivalent of a Lieutenant Colonel) and are broken down into smaller units called flights commanded by a Squadron Leader (the equivalent of an Army Major). Non commissioned ranks range from aircraftsman, leading aircraftsman, senior aircraftsman, junior technician, corporal, sergeant, chief technician, flight sergeant and warrant officer. Aircraftsman is the most junior rank and warrant officer is the most senior. The RAF carries out numerous roles including the provision of fighter aircraft, maritime reconnaissance aircraft, heavy lift transport aircraft and helicopter support to all UK military operations. The effort required to maintain aircraft in an operationally ready state is 'substantial' which means that the majority of RAF personnel are not primarily involved in carrying out flying duties but in supporting them.

5.3 Catchment Area of DCMH, RAF Brize Norton

There are currently 15 military Departments of Community Mental Health (DCMH's) in the UK. Each DCMH has responsibility for a number of military units within its catchment area. DCMH, RAF Brize Norton was opened in

Oxfordshire in 1995 due to a geographical need to provide community mental health support for military personnel following the closure of the inpatient psychiatric unit at RAF Wroughton in Wiltshire. The provision of a community based mental health service meant that military personnel were not treated in hospital away from their military unit, family and friends. Instead they could be seen in their local medical centre, home or DCMH for treatment.

Unstandardised SMT (described in Chapter **5**) was investigated between 1st January 2004 and 31st December 2005. During this period of time DCMH, Brize Norton catchment area included seven RAF stations and four Army camps. The RAF stations covered were RAF Brize Norton, Oxfordshire, RAF Innsworth, Gloucestershire, RAF Lyneham, Wiltshire, RAF Benson, Oxfordshire, RAF Halton, Buckinghamshire, RAF Odiham, Hampshire and RAF High Wycombe, Buckinghamshire. No historical data was available to determine the total number of active, regular RAF personnel residing within the catchment area who were given unstandardised SMT.

The four Army camps covered during this period of time included Buckley Barracks, Wiltshire, South Cerney, Gloucestershire, Dalton Barracks, Oxfordshire and St George's Barracks, Oxfordshire. One tri-service military unit was covered at the Royal Defence Academy at Shrivenham. This military unit provides higher education to members of the Royal Navy, Army and Royal Air Force and is termed tri-service as it provides training to all three services. No historical data was available for the total Army or tri-service

population within the catchment area of DCMH, RAF Brize Norton who were given unstandardised SMT.

No Royal Navy units were covered and there were relatively few full time Royal Navy personnel within the catchment area of DCMH, RAF Brize Norton at the time of the study. Royal Navy personnel tended to be dispersed amongst the RAF stations, Army camps and were occasionally attached to allied civilian security organisations. There was no historical data for the numbers of full time regular Royal Navy personnel within the catchment area of DCMH, RAF Brize Norton who were given unstandardised SMT.

The catchment area of DCMH, RAF Brize Norton, during the period of the RCT included four RAF stations at RAF Brize Norton, Oxfordshire, RAF Benson, Oxfordshre, RAF Halton, Buckinghamshire, and RAF High Wycombe, Buckinghamshire. The total RAF population within the catchment area as of 18th July 2013 was 10,742 full time regular personnel. The population of each RAF station was provided by each RAF primary care centre and added together for the total RAF population of full time military personnel. Five Army camps were covered which include Buckley Barracks, Wiltshire, Imjin Barracks, Gloucestershire, South Cerney, Gloucestershire, Dalton Barracks, Oxfordshire and St George's Barracks, Oxfordshire. One tri-service military unit was covered at the Royal Defence Academy at Shrivenham.

The total Army population within the catchment area of DCMH, RAF Brize Norton as of 18th July 2013 was 5,289 full time regular personnel and was provided by each Army primary care centre. No Royal Navy units were covered and there are relatively few Royal Navy personnel within the catchment area of DCMH, RAF Brize Norton. As of 18th July 2013, there were only 301 full time regular Royal Navy personnel within the catchment area of DCMH, RAF Brize Norton. The numbers of military personnel were provided by RAF and Army primary care centres within the catchment area of DCMH, RAF Brize Norton.

5.4 Military Stress Management and Resilience Policies

Chapter **3** explored the importance of the Health and Safety Executive management standards which could be used in organisational stress management (9). In response the MoD produced an overarching stress management policy in 2008 within their Health and Safety guidance which applies to all three Services (10).

The RAF recognised the need for a stress management policy and produced the RAF Stress Management and Resilience policy in May 2008 (11). The policy addressed and formalised the management of stress throughout the RAF by honing collective and individual resilience. It was recognised that personnel with a healthy approach to life were critical to the optimum delivery of air power and were best placed to make decisions when they were not

distracted by avoidable sources of stress and strain. It was also recognised that the RAF has a duty of care to protect the health, safety and welfare of all its personnel, including the risks arising from stress. The stress management policy applies to all RAF personnel.

The Army introduced a similar Stress Management and Resilience policy in 2010 and this apples to all Army personnel (80). The Royal Navy developed a slightly different approach to stress management through its TRiM programme (81). This arose from stress management within the Royal Marines where senior commanders recognised the need for a strategy to address and reduce the impact of traumatic stress on members of the corps in order to maintain operational effectiveness. The TRiM programme trains small teams of non medical personnel to recognise the symptoms and signs of stress and to give advice to individuals from within their own unit on coping strategies and how to manage them. The concept and practice of TRiM has subsequently been refined by staff from within the Royal Navy, Royal Marines and Defence Mental Health Services and widened to include more generic trauma management rather than just post traumatic operational stress management.

Greenberg *et al* (2010) conducted a cluster randomised controlled trial to determine the efficacy of Trauma Risk Management (TRiM) in a military population (81). They compared Trauma Risk Management against standard care in 12 Royal Navy warships. Six warships were randomised to use Trauma Risk Management after collecting baseline measurements. Follow up after 12-18 months found no significant change in psychological health or stigma

scores in either group; however, the studied vessels only encountered low numbers of critical incidents. Additionally, measurements of organizational functioning were modestly better in the Trauma Risk Management ships. The authors concluded that within organisations using Trauma Risk Management the intervention did no harm and may be beneficial and may, in time, lead to a valuable cultural shift.

TRiM has subsequently been adopted by all three services as an example of a secondary stress management intervention. Sutherland and Cooper (2000) described secondary level stress management as interventions that are "response directed" in that they help individual employees to recognise their response to stress and the symptoms of stress (29).

5.5 Summary

This chapter has described the structure of the military and has described the ranks of active regular military personnel who work within it. The structure and catchment area of DCMH, RAF Brize Norton has been described together with the changes in the catchment area between the unstandardised and standardised SMT's. Current Military Stress Management and Resilience Policies are described which have reflected and informed the development of SMT's within the military.

The next chapter will describe the methods used in this thesis to test the effectiveness of Stress Management Training (SMT) in active, regular military personnel with diagnoses of anxiety or depressive disorders.

Chapter 6

Methods

6.1 Introduction

This chapter describes:

- Study hypotheses.
- Methods used in the unstandardised SMT.
- Methods used in the standardised SMT.
- Statistical analyses used in this study.

The aims of this chapter are to describe the study hypotheses and the methods used in this study to test them. The outcome measures used in this study will be described in the unstandardised SMT and the standardised SMT. It was originally intended that only the standardised SMT would be evaluated by means of an RCT. However due to poor recruitment the standardised SMT was underpowered and after a pilot study it was decided to compare the standardised SMT to unstandardised SMT instead. The statistical analyses used to test the hypotheses will also be described.

6.2 Hypotheses

6.2.1 The null hypothesis was used that there would be no statistical difference between outcomes of participants who attended Standardised SMT (the intervention arm of the study) and those who were in the waiting list control arm of the study.

6.3 Unstandardised SMT

6.3.1 Method

Attendees of unstandardised SMT were identified from a database held at the DCMH, RAF Brize Norton for the years 2004 – 2008 and the case files were hand searched. The outcome measure used for attendees for the years 2006- 2008 was found to be the Perceived Stress Scale (PSS) (57). The PSS is a different outcome measure to the outcome measures used for the standardised SMT. The PSS is a measure of the perceptions of stress rather than a measure of anxiety or depression. The PSS was not considered an appropriate outcome measure to determine the effectiveness of the intervention. Attendees at unstandardised SMT for the years 2006 - 2008 were therefore excluded from further study.

Attendees at unstandardised SMT for the years 2004 and 2005 were identified. The outcome measures used for these attendees were the General Health Questionnaire - 28 (60) and the Beck Depression Inventory (BDI-II) (59). These outcome measures were the same as agreed with the MoD ethics committee to be used in the RCT where the intervention was the standardised SMT. The Beck Anxiety Inventory (BAI) (58) and the Clinical Global Impression (CGI) (82) were used in the standardised SMT but were not used during the period where the unstandardised SMT was given.

Demographic and outcome data were collected and occupational groups were classified as support services, engineering or aircrew. Support services

included administrators, medical assistants, police, catering, and supply staff. Engineering included mechanics and technicians. Aircrew included pilots, navigators, air stewards and air loadmasters (aircrew responsible for loading cargo onto aircraft).

6.4 Standardised SMT

6.4.1 Method

The aim of this study was to determine whether standardised SMT was acceptable to participants and effective in treating regular active military personnel who had been referred from primary care to the DCMH at RAF Brize Norton with a diagnosis of adjustment disorder or depression. The main study is an unblinded open Randomised Controlled Trial (RCT) that investigated whether standardised SMT is superior to no intervention [waiting list controls]. The results of the RCT are presented at the end of this chapter. Standardised SMT was evaluated by means of feedback from participants and the result of the survey is presented later in this chapter.

6.4.2 Study Entry Criteria

- A diagnosis of mild to moderate depression or adjustment disorder as determined by a clinical review with a Consultant Psychiatrist (at trial visit **1 –** reproduced at Annex **C**) according to the International Classification of Diseases 10th Revision (43).

- The lower age limit was 18 years and there was no upper age limit, although it is rare for regular military servicemen to serve beyond 65 years of age.
- Potential participants needed to be available to complete the study (end of trial visit **4 –** reproduced at Annex **C**)
- Participants were required to possess mental capacity and be able to provide informed consent to take part in the study.

Participants underwent an initial interview at visit **1** when they were given information on the study. A baseline standardised psychiatric clinical interview was carried out at visit **2** with the lead Consultant Psychiatrist to ensure inclusion criteria were met (study schedule is documented at Annex **C**). Each participant was then asked to sign a consent form to take part in the study by the lead Consultant Psychiatrist conducting the interview.

6.4.3 **Exclusion Criteria**

- Participants who had previously attended SMT.
- Reserve (previously mobilised) military personnel who were likely to exhibit differing problems to regular, active regular serving military personnel as described by Harvey (2011) (68).
- The presence of co-morbid psychotic disorders, current illicit drug or alcohol related disorders, PTSD, flying phobia and major depression (n=5).
- Those who did not provide informed consent (n=20).

6.4.4 **Military Specific Issues**

Chapter **5** explained the structure of the military and the various ranks amongst military personnel. Junior non commissioned officers were deemed to be the rank of Corporal and below and senior non commissioned officers to be Warrant Officer to Sergeant equivalent ranks. In the previous unstandardised intervention described at Chapter **6** CMHNs who presented the unstandardised intervention did so in uniform. Wilson & McAllister (2010) showed that wearing uniform and military rank can have a negative impact on a client's perception of the therapeutic relationship between clinician and client (83). They collected 282 responses from mental health patients regarding the impact that military uniform makes to the therapeutic relationship with the clinician. 63% (n = 178) regarded uniform as negatively influencing their relationship with the clinician, 37% (n = 104) responded that it did not. 39% (n = 111) believed rank to be a barrier, whereas 61% (n = 171) did not believe it affected the relationship. The results of this study were published in June 2010 and suggested that if CMHNs wore a uniform then this might negatively influence the group dynamic. This study is included in this thesis as its findings informed the presentation of the standardised SMT which began in November 2010.

In this study the recruiting clinician was a civilian Consultant Psychiatrist and the CMHN's who presented the standardised intervention did so in civilian clothes to minimise potential negative perceptions of participants taking part in the standardised SMT. The patient information sheet made it

clear that any coercion was not commensurate with military law and that participants could withdraw from the study at any time without any penalty.

In this study, rank was used as a military indicator of the likely educational attainment of each participant. Educational entry requirements for the UK military are role specific. The usual educational entry requirements for the Royal Navy are that junior non commissioned officers do not have any formal educational requirement prior to entry (84). Commissioned Officer ranks generally require at least A levels and/or degree equivalent education dependent upon the role applied for. Educational entry requirements for the British Army are that junior non commissioned officers do not have any formal educational requirement prior to entry (85). Serving junior non commissioned officers who wish to apply for commissioning have to gain at least five GCSEs with at least English Language and Mathematics at grade C or above. Commissioned Officer ranks generally require at least seven GCSEs and possibly A level and degree equivalent education dependent upon the role applied for. The usual educational entry requirements for the Royal Air Force are that junior non commissioned officers do not have any formal educational requirement prior to entry (86). Commissioned Officer ranks generally require at least A levels and/or degree equivalent education dependent upon the role applied for.

6.4.5 **Study Schedule**

The study schedule is documented at Annex **C**. Each participant was given an oral explanation of the study at visit **1** and a participant information sheet (reproduced at Annex **B**) explaining in simple, non-technical terms, the intervention, any potential risks and for the possible benefits. Potential participants who met the inclusion but not the exclusion criteria at screening (study visit 1) were offered the opportunity of taking part in the study and if they were agreeable to entering it they were given information on the study and at least 24 hours to consult others as necessary before giving informed consent at study visit 2. Potential participants were given a follow up appointment (study visit 2) to provide informed consent, undergo a psychiatric interview and to complete baseline outcome measures. At study visit 2 it was confirmed that participants still met inclusion and not exclusion criteria. The Study Schedule of all visits 1 - 4 were posted in the Case Record Forms (CRF) as per good CRF design.

The study was registered with the Clinical Trials Unit (CTU) at the Institute of Psychiatry, Psychology and Neuroscience, King's College London. The Principal Investigator was issued with a unique username and password to use for in the study and could log in via the internet to randomise the participants. Once participant randomisation was requested, patients were allocated to the intervention or control arm and emails were automatically generated confirming that randomisation had occurred. Given the nature of

the intervention it was not possible to conceal group allocation from either investigator or participants.

Psychiatric morbidity was measured at baseline (study visit **2**) and follow up (visits **3 – 4**) using the General Health Questionnaire (GHQ-28) (60), Beck Depression Inventory (BDI-II) (59), Beck Anxiety Inventory (BAI) (58) and the Clinical Global Impression (CGI) (82). The study visit schedule is reproduced at Annex **C**.

Participants who did not receive the standardised intervention straight away (the control group) were allocated to a waiting list and were seen six weeks and twelve weeks post recruitment as per the study schedule (Annex **C**). If participants were still symptomatic at the end of the trial they were offered standardised SMT as a non-trial patient after the trial period had ended (study visit **4**). The usual waiting time for non-study patients to be seen for standardised stress management training was in excess of three months and it was not envisaged that those participants who participated in the study and who did not get the intervention would have their treatment delayed. This was discussed individually at study visit **4** – the *exit visit* (Annex **C**).

Follow up was at six weeks (study visit **3**) and twelve weeks (study visit **4**) when further psychiatric clinical interviews were conducted and outcome measures were repeated. Concordance to any prescription drugs, psychotropic over the counter and psychological treatments was recorded at

each study visit by the Consultant Psychiatrist and the results were recorded in the Case Report Form (CRF).

The rater of the CGI was blinded to the other rating scores as the CGI was carried out prior to the participant's completion of the other rating scales. Follow up clinical interviews recorded the occurrence of stressful events in the interim. Each participant had a CRF, which recorded demographic data, consent, the outcome measures, randomisation and a record of the psychiatric interview. Audits were carried out at the Department of Community Mental Health (DCMH) RAF Brize Norton including, but not limited to the presence of required documents, the informed consent process, and comparison of CRF's with source documents. Audit of the CRF's during the study found that 100% of the CRF's contained demographic data, consent, the outcome measures, randomisation and a record of the psychiatric interview.

Participants were deemed to be compliant with the study schedule (Annex **C**) if they attended within $\pm$1 week either side of their planned visit schedule. A standardised feedback form (reproduced at Annex **F**) assessed the participant's perception of the usefulness and quality of the standardised SMT at the end of the course. The study database was anonymised and entered into a Microsoft Excel electronic database. The clinical data study files were locked and dated and the details put into the study master files. All the CRF's were reviewed and signed off subject to audit.

6.4.6 Study Outcome Measures

General Health Questionnaire – 28

The GHQ (28 item) self-rating scale is widely used in clinical research to screen for the presence of symptoms indicative of common mental disorders (60). It is made up of the four subscales:

A – somatic symptoms (questions 1-7)

B – anxiety/insomnia (questions 8-14)

C – social dysfunction (questions 15-21)

D – severe depression (questions 22-28)

There are no threshold scores for individual sub-scales. Prady et al (2013) found little evidence to recommend the use of the GHQ-28 subscales in routine clinical or epidemiological assessments (87). The subscale scores were, therefore, treated with caution. The anxiety/insomnia subscale was analysed in this study as the Beck Anxiety Inventory (BAI) was not used in attendees of the unstandardised SMT. The total GHQ-28 score was used as the main outcome measure.

The GHQ – 28 can be scored using a number of different methods as described by Goldberg (1997) (88). This study used the method (0-0-1-1) ("Better than usual", "Same as usual", "Worse than usual", "Much worse than usual") as advocated by Goldberg (1988) (60). This scoring method generates an overall score ranging from 0 to 28. An overall score above **5**

indicates that the person would be classified as suffering from “significant psychological symptoms/psychiatric illness” (88). Goldberg (1997) (88) reported a sensitivity of 79.7% and specificity of 79.2% for threshold scores of 5/6 on the GHQ 28. This study used a cut off score above 5 to suggest the presence of psychiatric illness as determined by the GHQ 28. Permission to use the GHQ-28 was obtained and copies of the GHQ-28 used in the study were purchased in accordance with copyright.

Beck Depression Inventory (BDI – II)

The BDI-II is the latest version of the widely used and validated Beck Depression Inventory (BDI) (59). The original BDI was created by Dr Aaron T. Beck in 1961 and is a 21-question multiple-choice self-report inventory. The BDI was revised to a BDI-1A version in 1978. The BDI-II was a further 1996 revision of the BDI and was developed in response to the American Psychiatric Association's publication in 1994 of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (47). Many of the diagnostic criteria for Major Depressive Disorder were changed and items involving changes in body image, hypochondria, and difficulty working were replaced. Also, sleep loss and appetite loss items were revised to assess both increases and decreases in sleep and appetite. All but three of the items were reworded; only the items dealing with feelings of being punished, thoughts about suicide, and interest in sex remained the same. Like the BDI, the BDI-II also contains 21 questions, each answer being scored on a scale value of 0 to 3 depending on the answers to each question. The cut offs used differ from the original: a sore of 0–13 suggests minimal

depression; a score of 14–19 suggests mild depression; a score of 20–28 suggests moderate depression; and a score of 29–63 suggests severe depression. Higher total scores indicate more severe depressive symptoms. For this study a score of 14 or more on the BDI-II was considered a score suggestive of depression. The test has been shown to have a high one-week test–retest reliability (Pearson r =0.93), suggesting that it was not overly sensitive to daily variations in mood and a high internal consistency (α=.91) (89). The BDI-II is subject to copyright and copies of the BDI-II were purchased in accordance with the conditions of the copyright.

Beck Anxiety Inventory (BAI)

The BAI is a 21 item self rating scale each describing a common symptom of anxiety (58). The questions ask how much the person has been bothered by each symptom over the past week on a 4 point scale ranging from 0 to 3. The items are summed to obtain a total score that can range from 0 to 63. Scores from 0-7 suggest minimal anxiety, 8-15 suggest mild anxiety, 16-25 suggest moderate anxiety, and scores of 26 and above suggest severe anxiety. The BAI was used in this study as Piotrowski (1999) (90) has shown that it is a widely used and validated tool in measuring anxiety in research. A cut off score of 8 or above was used in this study to suggest the presence of anxiety as determined by the BAI scores. The BAI is also subject to copyright and copies of the BAI were purchased for use in this study in accordance with the conditions of copyright.

Clinical Global Impression (CGI)

The CGI severity scale (CGI-S) is a 7-point scale that requires the clinician to rate the severity of the patient's illness at the time of assessment, relative to the clinician's past experience with patients who have the same diagnosis. The use of the CGI has been described by Busner & Targum (2007) (82). Considering total clinical experience, a patient is assessed on severity of mental illness at the time of rating 1, normal, not at all ill; 2, borderline mentally ill; 3, mildly ill; 4, moderately ill; 5, markedly ill; 6, severely ill; or 7, extremely ill.

The CGI improvement scale (CGI-I) is a 7-point scale that requires the clinician to assess how much the patient's illness has improved or worsened relative to a baseline state at the beginning of the intervention and rated as: 1, very much improved; 2, much improved; 3, minimally improved; 4, no change; 5, minimally worse; 6, much worse; or 7, very much worse.

The CGI Efficacy Index is a 4 point × 4 point rating scale that assesses the therapeutic effect of the treatment as 1, unchanged to worse; 2, minimal; 3, moderate; 4, marked by side effects rated as none, do not significantly interfere with patient's functioning, significantly interferes with patient's functioning and outweighs therapeutic effect.

The CGI was used in this study as the scales offer a readily understood, practical measurement which has been shown by Busner & Targum (2007)

(82)) to be an easily administered tool in reserch populations. The CGI is not subject to copyright.

The primary outcome measure used in this study was a reduction in symptom reporting on the General Health Questionnaire (GHQ – 28)**.** Secondary outcome measures were measured reductions in the Beck Depression Inventory (BDI-II) and Beck Anxiety Inventory (BAI) scores. The Clinical Global Impression (CGI) scores were used as a subjective assessment of the mental health of the participant. If the participant was found to be suffering from a worsening of their mental health at interview then a decision was made whether the participant should be removed from the study in accordance with the exclusion criteria.

6.4.7 **Power Calculation**

Assistance with statistical power calculations were sought from the Head of Statistics at the Institute of Naval Medicine and from academic staff at the Academic Department of Military Mental Health (ADMMH) at King's College London. With a minimum of 90 patients in arm, the study was calculated to have 80% power to detect a reduction in GHQ - 28 case prevalence from 80% to 60% with Fishers's Exact test (nQuery Advisor v6 and Statistica v6 Tulsa, USA). However, this assumed 100% follow up and if it was assumed that more realistic follow up rates of 70% would be achieved then approximately 130 subjects were needed for each arm of the study.

The feasibility of recruiting 260 subjects over a 2½ year period who met the inclusion criteria was assessed during a six month pilot study period and was carried out at the DCMH, RAF Brize Norton between 1st September 2010 and 28th February 2011. The pilot study data were included in the main study and the results of the pilot study informed the development of the main RCT. The aim of the pilot study was to ensure that the SMT was standardised, the proposed outcome measures were appropriate and recruitment to the study was sufficient.

6.4.8 **Ethical Considerations**

The study application was initially considered by the RAF Scientific Advisory Committee (SAC) who considered that the most appropriate SAC for this particular study would be the Army SAC. The Army SAC considered the study application in February 2010 and the full Ministry of Defence Ethics Committee (MODREC) considered the application in March 2010. MODREC referred the study to the Royal Navy SAC for further advice who considered the application in April 2010. MODREC re-assessed the revised application on 13th May 2010 and gave their ethical approval for the trial to proceed on 30th June 2010.

The study was registered with the International Standard Randomised Control Trials Number Register [ISRCTN21392756] on 28th October 2010.

The RCT was also registered with the Clinical Trials Unit (CTU) at King's College London for the randomisation of participants.

6.4.9 **Recruitment**

The pilot study carried out at DCMH, RAF Brize Norton proposed that approximately 20 subjects would be recruited into each arm of the pilot study. One of the aims of the pilot study was to ensure that recruitment to the study was sufficient.

The pilot study results were reviewed on the 25th February 2011 and a lack of recruitment to the study was identified. In order to improve recruitment two further research sites were proposed at the Royal Navy Department of Community Mental Health (DCMH) at Portsmouth, Hampshire and the Army DCMH at Tidworth, Wiltshire. Consent to include these additional research sites was agreed by MODREC in March 2011 and agreement to take part in the study was sought from both these DCMH's.

The Royal Navy DCMH, Portsmouth initially agreed to become the second research site and a presentation of the standardised SMT was made to them on the 4th April 2011. The G.P. Registrar at DCMH, Portsmouth agreed to become the Principal Investigator at the second research site. She visited DCMH, RAF Brize Norton on 20th July 2011 to familiarise herself with the standardised SMT and she received good clinical research practice training from a Consultant Psychiatrist. The Clinical Trials Unit (CTU) at King's

College, London agreed to add the additional second research site at DCMH, Portsmouth to their randomisation database. Unfortunately DCMH, Portsmouth eventually declined to take part as the second research site due to heavy clinical commitments, which precluded the GP Registrar being able to proceed as the local research investigator.

The DCMH at Tidworth was contacted with details of the study but the DCMH manager at Tidworth expressed his view that in his opinion SMT was ineffective and would not be offered to patients referred to his department. The care pathway offered at DCMH, Tidworth for patients diagnosed with anxiety and depression was 1:1 treatment with a community mental health nurse. DCMH Tidworth, therefore, declined to take part in this study as the third research site. A request was made that Army Primary Health Care (APHC) identify a further Army DCMH to take part in the study but this was declined.

Recruitment to the study took place in outpatient clinics held at DCMH RAF Brize Norton between 1st September 2010 and 1st September 2013. Potential participants were seen at study visit **1** and given at least 24 hours to consider the study information (reproduced at Annex **B**) and to consult others as necessary before giving informed consent. If the participant requested further information then they were given the choice of another appointment to discuss the study further and advised that they could also discuss the study with the independent medical officer whose contact details were included in the study information (Annex **B**) which was given to participants at study visit **1**.

Potential participants were then seen at study visit **2** when informed consent was sought.

Advice and consent for data retrieval was sought from the Army Caldicott Guardian. Data was anonymised using an anonymisation code to maintain confidentiality. Data was stored on a password protected computer database only accessible by the Consultant Psychiatrist involved in the study. Participants were reassured that they may withdraw from the study at any point.

The reason(s) for withdrawal or discontinuation were documented in the case report form (CRF). If there was a clinically significant medical reason for withdrawal, the subject would remain under the supervision of the responsible clinician until the participant was in satisfactory health. With the participant's consent, their medical officer was informed. If a participant withdrew from the study because of an adverse event (AE), the principal specific event and any related test results was captured on the CRF. Participants who discontinued the study due to an AE were followed until resolution or until stabilisation.

It was possible that some individuals may have found parts of the standardised SMT intrusive or upsetting. The standardised SMT was delivered by experienced CMHN's who were trained to deal appropriately with participants who experienced issues related to the intervention. Participants were advised that they were free to miss any parts of the training package if they wished. However participants (n=28) were excluded from the study if they did not complete the standardised intervention.

It was recognised that criminal or other disclosures requiring action such as professional misconduct could occur during the study and/or during the clinical interview. Normal departmental operating procedures would be followed which included disclosure of this information to the participant's medical officer and possibly to their chain of command. No such disclosures were made in this study.

The study complied with MoD standards for handling personal data, which are more rigorous than those operating elsewhere because of security implications. No individual was identified in reports or publications and all reports are based on aggregated data.

Consent forms and questionnaire data were stored in participant's CRF's in locked metal cabinets within DCMH, RAF Brize Norton for the duration of the study. Anonymised data was stored electronically on a password protected computer at DCMH, RAF Brize Norton until all analyses were completed. After which consent forms and research records will be stored at DCMH, RAF Brize Norton or in archived clinical storage at the Ministry of Defence for twenty years, in accordance with Medical Research Council (MRC) guidelines for storing research records relating to clinical or public health studies for public health data (91).

6.5 Statistical Analyses

6.5.1 The non categorical variables analysed for this study were tested for normality using the command ‘sktest’ in the statistical software package STATA 10 (92). For each variable in the dataset sktest presented a test for normality and another for kurtosis. The two tests were then combined into an overall test statistic. Skewness and kurtosis were measured for each non categorical variable and the variables in the dataset were found to be normally distributed. Potential violation of assumptions for the dataset was addressed by plotting histograms to determine whether the median and mean occurred in the middle of the boxplot with few outliers. This was found to be the case for each non categorical variable tested.

6.5.2 Student’s t test was used to analyse non categorical data in this study which were found to be normally distributed. Student’s t test is a statistical hypothesis test in which the test statistic follows a Student's *t* distribution if the null hypothesis is supported. It was used to determine if two sets of data were significantly different from each other, and is most commonly applied when the test statistic follows a normal distribution.

6.5.3 Pearson's chi-squared test ($\chi 2$) is a statistical test applied to sets of categorical data to evaluate how likely it is that any observed difference between the sets arose by chance. It is suitable for unpaired data from large samples and was used in this study to test the categorical data.

6.6 Summary

This chapter has described the hypotheses in this study and the methods used to test them. The outcome measures used in this study have been described together with the statistical analyses used to test the hypotheses. The next chapter will describe the unstandardised intervention.

Chapter 7

Unstandardised Intervention

7.1 Introduction

This chapter describes:

- Stress management interventions.
- The unstandardised intervention (unstandardised SMT).
- The study design.
- The quantitative results of the study.

The aims of this chapter are to describe the unstandardised SMT and the characteristics of attendees.

7.2 Stress Management Interventions

Occupational stress can be managed by using a variety of interventions. Primary interventions aim at reducing the influence of the stressors. Secondary interventions aim to improve an individual's ability to cope with stressors and tertiary interventions treat individuals who are suffering from stress related illness.

7.2.1 **Primary Level Stress Management -** This type of strategy or intervention is *"stressor directed"* in that it either eliminates, reduces or controls a source of stress. The aim is to minimise stress at work by changing

the macro environment, micro environment or by improving perceptions of worker control. Changes in macro environment can address organisational culture and leadership, physical work conditions and workload, safety climate, career development programmes and bullying at work. Changes in the micro environment can address systems and task redesign, alternative work arrangements, shift working and communication exercises such as role negotiation. Improving perceptions of worker control can increase opportunities for decision making. Such an intervention in the military was the introduction of the RAF Stress Management Policy in 2008 (11). This policy advocates the important role of effective line management in reducing workplace stress. The policy emphasises that "good stress management starts with good line management".

7.2.2 **Secondary Level Stress Management -** These interventions are *"response directed"* in that they help individual employees to recognise their response to stress and the symptoms of stress. The aim is to develop stress resistance and adaptive coping strategies through education and training. Ganster *et al* (1982) (93) found that organisational level stress control and stress prevention interventions were more effective than individual level coping strategies as they had a more lasting effect. Whilst it is not possible to eliminate all sources of negative stress the effects of exposure to stress could be minimised by the use of techniques aimed at improving stress coping processes by the individual. Examples of such secondary level stress management interventions are interpersonal and social skills, assertiveness,

time management and relaxation training. In the military an example of a secondary level stress management intervention was the introduction of Trauma Risk Management (TRiM) by Greenberg et al (2008) (94). TRiM aims to identify military personnel through line management who might be at risk of developing mental illness as a result of stressful events.

7.2.3 **Tertiary Level Stress Management** - These interventions are *"symptom directed".* The objective is to assist in the treatment and rehabilitation of employees who are already stressed. Employee Assistance Providers (EAPs) provide counselling services to help individual employees deal with personal or work related problems. In the NHS the Improving Access to Psychological Therapies (IAPT) service is another example of a tertiary stress management level intervention (54). The IAPT programme supports the frontline NHS in implementing National Institute for Health and Clinical Excellence (NICE) guidelines for people suffering from depression (49) and anxiety disorders (48). It was created to offer patients a realistic and routine first-line treatment, combined where appropriate with medication, which traditionally had been the only treatment available. The programme was first targeted at people of working age but in 2010 was opened to adults of all ages. An example of a tertiary level stress intervention in the military was unstandardised Stress Management Training (SMT) held at DCMH RAF Brize Norton.

7.3 Unstandardised Stress Management Training (SMT)

Unstandardised SMT was developed to provide a group treatment to active, regular military personnel referred from primary care to DCMH RAF Brize Norton. The unstandardised SMT was originally introduced as a way of coping with the clinical demand from primary care for anxiety based treatments. The provision of group based anxiety treatment at DCMH RAF Brize Norton was an acknowledgement that it was impossible to provide every patient with 1:1 treatment with a Community Mental Health Nurse (CMHN) within the clinical resources of the DCMH. Unstandardised SMT was based therefore on not having sufficient resources to offer usual care (1:1 sessions with a CMHN) to every patient rather than a desire to provide a group treatment.

So far no research had been conducted to determine the sociodemographic and/or occupational characteristics of attendees of previous unstandardised SMT. Nothing was known about the attendees who were selected by clinicians at DCMH RAF Brize Norton as being suitable to attend the unstandardized SMT. No sociodemographic or diagnostic information was known.

This study presents attendee's sociodemographic and occupational characteristics, ICD-10 (43) diagnoses and whether they were taking medication. Patients were referred from primary care to the DCMH at RAF Brize Norton and were assessed by either a CMHN or Consultant Psychiatrist. The assessment was not standardised and was not subject to assessment by

means of an instrument such as the SCAN (Schedules for Clinical Assessment in Neuropsychiatry). The CMHN or Psychiatrist made the diagnosis of anxiety disorder or depression based on a clinical interview and decided whether the patient was suitable to attend the unstandardised SMT. The patient was then given an appointment to attend the next available SMT.

7.3.1 Content of the Unstandardised Stress Management Training

The content of the unstandardised SMT consisted of a six hour presentation run monthly at the DCMH RAF Brize Norton. The unstandardised SMT was delivered to up to 16 attendees by two CMHN's which was presented via a PowerPoint presentation. There was no standard package of PowerPoint slides and differing combinations of PowerPoint slides were used in each presentation. The combination of PowerPoint slides used was dependent on which CMHN presented the unstandardised SMT. There was no timetable for the day and no training notes were provided for CMHN's who presented the unstandardised SMT. There was no standardisation of treatment aims or goals.

The CMHN's who provided unstandardised SMT were drawn from generic mental health nursing staff at the DCMH rather than from a separate core group of mental health nursing staff that had a special interest in SMT or were trained in a psychological therapy. No training was provided to new CMHN's. No feedback and no fidelity checks were carried out to ensure that the content of the SMT was standardised when presented by the differing CMHN's involved.

The content of the PowerPoint presentation generally included basic information on stress and its relationship with ill health. The definitions of stress and the causes of stress were explored together with the physical and psychological symptoms caused by stress. The unstandardised SMT was usually carried out with a group of up to 16 attendees. Smaller "break out" sessions where attendees were encouraged to discuss stress related issues in smaller groups of three or four were generally not provided and therefore attendee's participation in the SMT was limited. Participants were free to leave at any time during the SMT. No participants however left the SMT early.

Brief generic anxiety management training was provided to attendees in the afternoon of the unstandardised SMT. The brief generic anxiety management training included controlled breathing and progressive muscular relaxation exercises and lasted for about an hour. No feedback was collected from attendees regarding the quality of the unstandardised SMT.

Attendees on the unstandardised SMT courses had their anxiety and depression symptoms assessed by completing the General Health Questionnaire - 28 (60) and the Beck Depression Inventory BDI-II (59). These outcome measures were completed by attendees at the start of the unstandardised SMT and provided self reported data. The outcome measures were not analysed and no follow up outcome measures were carried out. No occupational information was recorded as to whether unstandardised SMT was effective in assisting attendees to return to the full duties of their trade.

7.4 Results

7.4.1 Sociodemographic and Occupational Characteristics of Unstandardised SMT Attendees

90 attendees of unstandardised SMT were identified between 1st January 2004 and 31st December 2005. The clinical records of the attendees were hand searched and clinical, sociodemographic and occupational characteristic information was extracted. No data were available to identify how long attendees waited before attending unstandardised SMT and how many attendees completed the unstandardised SMT. No data were available to determine whether attendees were occupationally impaired at the time of the unstandardised SMT or following the intervention.

Table 7.1 presents the sociodemographic and occupational characteristics of the attendees. Attendees were predominantly male (78%) with an almost equal number of married or single. Attendees who were in long term relationships or living together were classified as single for this study. Most attendees were serving in the engineering branch (68%) of the Royal Air Force.

Table 7.1 Sociodemographic and occupational characteristics of the attendees (n=90)

Characteristic		n (%) or mean (95% CI)
Gender	Male	70 (78%)
	Female	20 (22%)
Relationship status	Married	43 (48%)
	Single	45 (50%)
	Separated/Divorced/Widowed	2 (2%)
Service	Royal Navy	2 (2%)
	Army	20 (22%)
	Royal Air Force	68 (76%)
Occupation	Support services	26 (29%)
	Engineering	61 (68%)
	Aircrew	3 (3%)
Age	Mean age at attendance of the unstandardised SMT intervention (in years)	30.4 (28.7 to 32.1)

7.4.2 ICD-10 Diagnoses and Medication

The clinical records of the unstandardised SMT attendees were hand searched and diagnostic information was extracted. Most of the attendees had a diagnosis of adjustment disorder (91%) with a minority suffering from phobias, depression and alcohol related disorders (**Table 7.2**). Each diagnosis was recorded in the DCMH clinical record and had been made by a CMHN or a Psychiatrist prior to the unstandardised SMT. A minority (12%) of attendees were taking psychotropic medication.

Table 7.2 ICD-10 Diagnoses and medication (n=90)

Diagnosis – ICD code and description	N (%)	Taking Medication N (%)
F10 Alcohol	3 (3%)	0 (0%)
F32 Depression	2 (2%)	2 (2%)
F40.2 Specific Phobia	3 (3%)	0 (0%)
F43.2 Adjustment Disorder	82 (91%)	9 (10%)
Total	90 (100%)	11 (12%)

7.4.3 Main Outcome Measures

An overall score above 5 on the GHQ-28 was considered to have met "caseness". Attendees who took part in unstandardised SMT generally met "caseness" as measured by the GHQ-28 and they scored highly on the anxiety/insomnia subscale (Table **7.3**). These results are consistent with the diagnoses of adjustment disorder and depression (Table **7.2**).

A score of 14 or more on the BDI-II was considered suggestive of depression. The mean BDI-II scores suggested that attendees on the unstandardised SMT might also have been suffering from depression.

Table 7.3 Main Measures

Psychometric measure	Number meeting "caseness" N (%)	Mean (95% CI)
GHQ 28 Total Score	56 (62%)	9.6 (7.8 - 11.2)
GHQ 28 Anxiety/insomnia sub score	N/A	2.2 (1.8 - 2.6)
BDI-II	51 (57%)	17.0 (14.2 - 19.7)

7.5 Summary of Results

The results of this study showed that the most frequent attendees at the unstandardised SMT were male engineers who served in the Royal Air Force. Most SMT attendees were suffering from adjustment disorders and a minority took psychotropic medication. A minority of attendees were diagnosed with depression prior to the unstandardised SMT. The study results suggested that most attendees met "psychiatric caseness" as determined by the GHQ-28 and some attendees might have been depressed at the time they received the unstandardised SMT. These results are similar to those obtained by Kitchiner *et al* (2009) (72) who found similar levels of "caseness" on GHQ-28 and BDI-II scores.

7.6 Summary

This chapter has described the content of the unstandardised SMT and its usage in mainly RAF attendees who were diagnosed with Adjustment Disorders. The next chapter will describe the development of standardised SMT where the content and format of the unstandardised SMT was developed and refined. The standardised SMT will be compared to waiting list control in a randomised controlled trial.

Chapter 8

Standardised Intervention

8.1 Introduction

This chapter describes:

- The standardised intervention (standardised SMT)
- The study design and methodology employed
- The results of the feedback survey and main study (RCT).

8.2 Standardised Stress Management Training (SMT)

SMT programmes aim to reduce the morbidity associated with exposure to stressful events and have been in widespread use in the military since 1995. A example of an SMT programme was described by Sharpley *et al* in 2008 (95). Although they are widely used there is conflicting evidence as to how or why they might be effective. Few RCTs have been conducted within a military setting with one of the few exceptions provided by Greenberg *et al* (2009) (66).

The standardised SMT was developed by a stress management group based at the Department of Community Mental Health (DCMH) at RAF Brize Norton. The group consisted of a lead Consultant Psychiatrist and three Community Mental Health Nurses (CMHN's), one of whom had lead responsibility for the running of the standardised SMT. All four clinicians worked together at the DCMH Brize Norton and were experienced in delivering the previous

unstandardised SMT (see chapter **7** for details). Each new CMHN was selected according to their presentational skills as determined by the lead CMHN and Consultant Psychiatrist. Each new CMHN would facilitate at least five standardised SMT's before becoming a lead clinician. During their five initial standardised SMT's each new CMHN received feedback from the lead CMHN on their presentational skills and content of their presentation.

The standardised SMT was developed from the existing unstandardised SMT by using the previous presentation and reading materials as a template. The previous unstandardised PowerPoint slides were updated by informally testing different presentations of unstandardised SMT and obtaining informal feedback from attendees and CMHNs who presented the unstandardized SMT. The feedback was informal and was not based on more objective evidence. Some of the previous unstandardised PowerPoint slides were deleted and some new PowerPoint slides were added. Each PowerPoint slide was then standardised in format to provide a consistent presentation. The final standardised PowerPoint presentation was agreed by all four stress management group clinicians who were all experienced in presenting the unstandardised SMT and all had received informal feedback from attendees. The standardised SMT was also provided as a printed hand out to give to each participant as an *aid memoire.*

The standardised SMT consisted of a six hour presentation run monthly at the Department of Community Mental Health at DCMH RAF Brize Norton. The standardised SMT was delivered to up to 16 participants by two of the

CMHN's from the stress management group based at DCMH, RAF Brize Norton. Two CMHN's were considered the minimum staffing to allow organisation of the day, facilitation of the presentation and smaller "break out" groups (3-4 participants) to discuss specific stress related issues. The timetable of the day is reproduced at Annex **D**.

Standardised SMT fidelity checks were carried out by the Consultant Psychiatrist every two months during the study. The fidelity checks captured 50% of the standardised interventions delivered during the study and the standardised SMT. The fidelity checks consisted of ensuring that all (100%) of the standardised PowerPoint slides were shown in the presentation and checking the content of the information delivered matched the training notes (reproduced at annex **E**). The fidelity checks are described further in section 8.4.3.

8.2.1 **Content of the Standardised SMT**

The content of the standardised SMT consisted of a PowerPoint presentation using a standard set of presentation slides (reproduced at Annex **E)**. The PowerPoint presentation was interspersed with "break out" sessions which allowed the groups to participate in discussion initially about the information just presented to them and then about the subjects to be discussed. The group then dispersed for lunch to allow informal discussion between participants about the information presented to them in the morning. The standardised SMT then concluded with brief relaxation training, which included controlled

breathing and progressive muscular relaxation exercises lasted for about an hour (a timetable for the day is reproduced at Annex **D)**. CMHN's attached to the stress management group received training in presenting the content of the standardised SMT from the lead CMHN and the lead Consultant Psychiatrist. The standardised SMT set of presentation slides (reproduced at Annex **E)** was used as the training material. Presentation skills were acquired by attending courses on how to present to a military audience, which were run at RAF Brize Norton Force Development Squadron. Each CMHN was expected to have attended such a course prior to presenting the standardised SMT.

8.3 Patient Satisfaction Survey Result

Feedback from the standardised SMT at DCMH RAF Brize Norton was collected relating to the quality of the contact and the format of the standardised SMT. No previous research had been carried out to determine whether participants considered the quality of the contact and format of the standardised SMT to be good or not. This information was considered important as otherwise participants may not have engaged with an intervention they did not like.

All participants who attended standardised SMT over the period 1st September 2010 to 31st August 2011 were asked to complete a patient satisfaction survey at the end of the training. Clinical and sociodemographic data was collected from the participants and they were asked to rate the

format and content of the standardised SMT on a five point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree) (patient satisfaction questionnaire is reproduced at Annex **F**). Junior non commissioned officers were deemed to be the rank of Corporal and below and senior non commissioned officers to be Warrant Officer to Sergeant equivalent ranks. Occupational status included support staff such as administrators, medical assistants, police, catering and supply staff. Aircrew included pilots, navigators and air load masters (aircrew responsible for cargo carried on board aircraft).

92% (89/97) of participants completed a post course survey. Clinical and socio-demographic data were available for 94% of participants who participated in the standardised SMT over the period 1st September 2010 to 31st August 2011. Table **8.1** shows the socio-demographic and occupational characteristics of the participant sample.

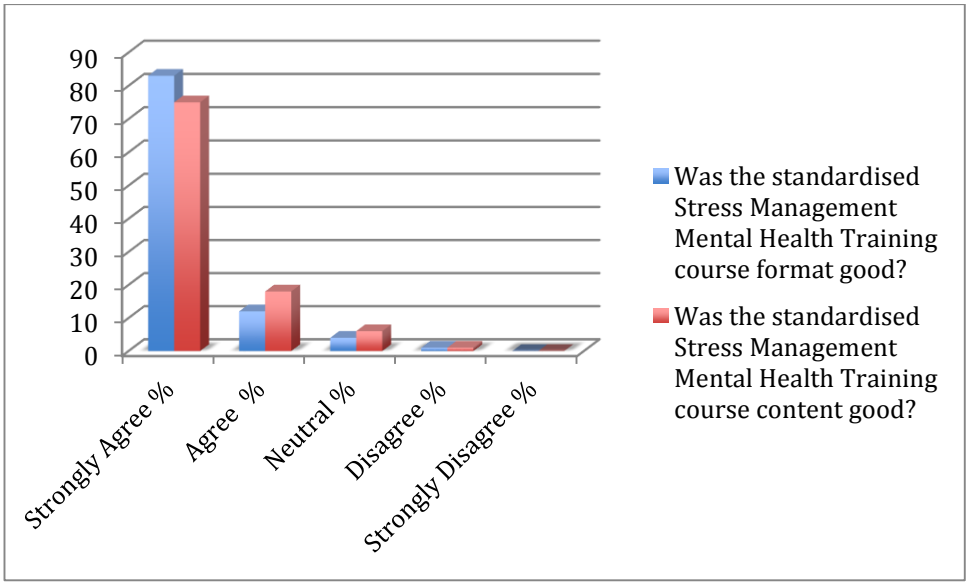
Table 8.1 Socio-demographic and occupational characteristics of the participant sample (N = 91, excludes 6 participants who had missing socio-demographic data)

Gender	**N (%)**
Male	65 (71)
Female	26 (29)
Age (in years)	
Under 25	20 (22)
25 – 34	40 (44)
35 – 44	23 (25)
45 and over	8 (9)
Marital Status	
Single	38 (42)
Married	47 (52)
Separated/Divorced/Widowed	6 (6)
Service	
Royal Navy (including Royal Marines)	1 (1)
Army	37 (40)
Royal Air Force	54 (59)
Rank	
Commissioned Officers	5 (5)
Senior Non Commissioned Officers	19 (21)
Junior Non Commissioned Officers	67 (74)
Occupation	
Support services	54 (59)
Engineering services	31 (34)
Aircrew	6 (7)

Table 8.2 Patient Satisfaction (N=89)

	Strongly Agree Number (%)	Agree Number (%)	Neutral Number (%)	Disagree Number (%)	Strongly Disagree Number (%)
Was the standardised Stress Management Training course format good?	74 (83)	11 (12)	3 (4)	1 (1)	0 (0)
Was the standardised Stress Management Training course content good?	67 (75)	16 (18)	5 (6)	1 (1)	0 (0)

Figure 8.1 Patient Satisfaction (N=89)



8.4 Main Study (RCT) Results

Analysis of primary and secondary outcomes of the main study was carried out using the Software Statistical Package STATA-10 (92) under the guidance of academic staff at the Academic Centre for Defence Mental Health (ACDMH) at King's College London. The analysis followed the format of a t-test for continuous data and the Pearson correlation coefficient where appropriate. The study was originally powered to detect a probability of the reduction of "caseness" on the GHQ score i.e. a score of **5** or less if at least 130 participants were recruited into each arm of the study trial. Recruitment to the study was unfortunately insufficient and only 98 participants completed the study. Lack of recruitment limited the trial's statistical power.

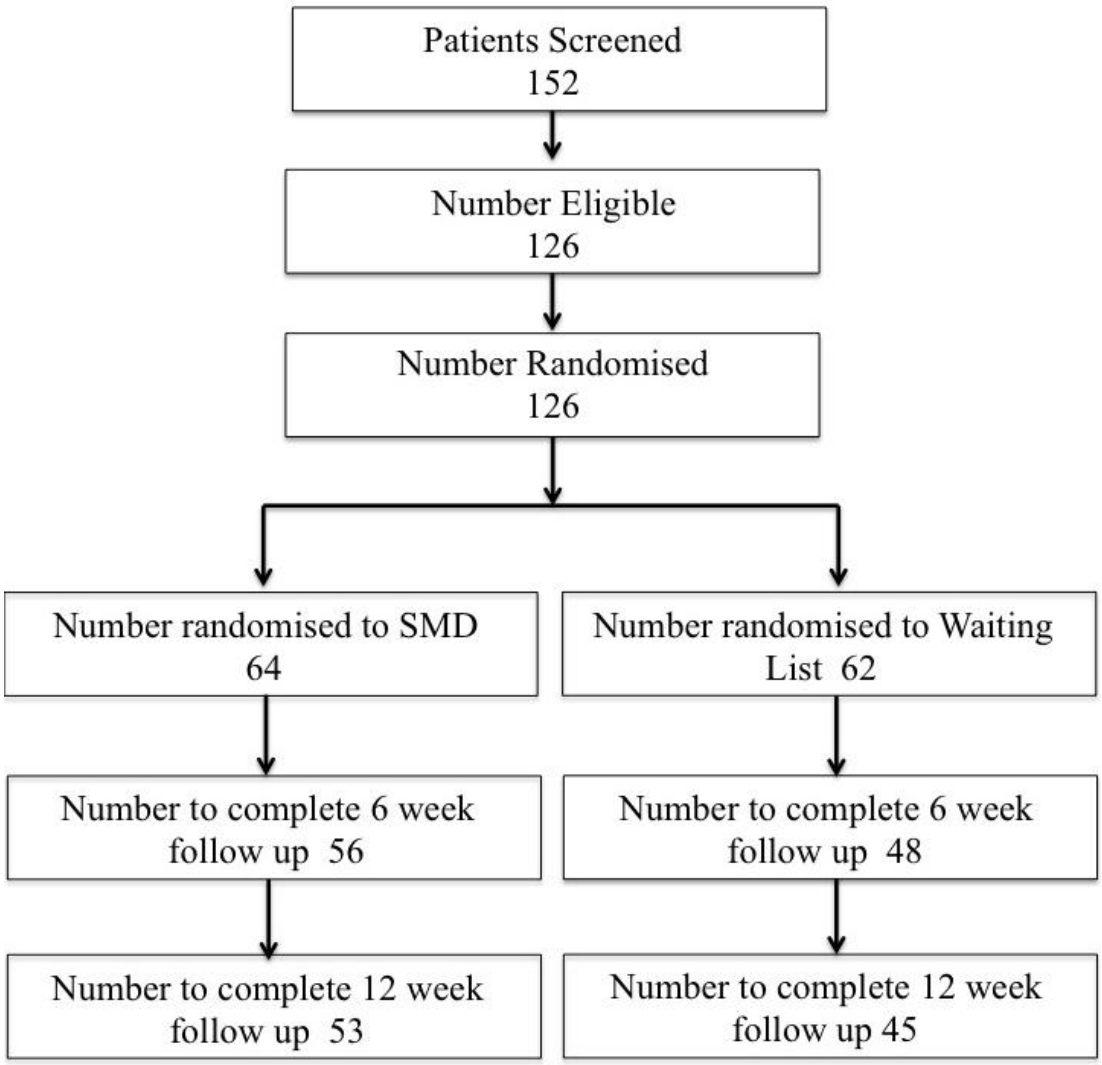
8.4.1 **Trial Flow**

The trial flow is shown in Figure **8.2**.

- Of the 152 potential participants who were invited for screening at visit **1** (study schedule reproduced at Annex **C**) 20 did not give consent.
- Six potential participants were excluded as one had previously attended SMT, four had a primary diagnosis of moderate to severe depression and one was diagnosed with a personality disorder. 92 participants were diagnosed with adjustment disorders.

- 126 participants were randomised, 64 to standardised SMT and 62 to the waiting list control group.

Figure 8.2 – Trial Flow



8.4.2 **Standardised Stress Management Training (SMT)**

Of those individuals randomised to the standardised SMT group:

- Eight participants did not attend for six week follow up.
- Three participants did not attend follow up at 12 weeks.
- 11 participants who did not complete the study had a diagnosis of adjustment disorder and none were excluded due to co-morbid illnesses.

8.4.3 **Waiting List Control Group**

Of those randomised to the waiting list control group:

- 11 did not attend six week follow up.
- Three did not attend for follow up at 12 weeks.
- 14 participants who did not attend follow up had a diagnosis of adjustment disorder.
- Two participants were excluded due to a diagnosis of depression and one was excluded because of a diagnosis of emotionally unstable personality disorder.

Table 8.3 Demographic, military and health related factors for all study subjects, overall and by arm of the trial

	Overall Mean (SD) or N (%)	**SMT mean (SD) or N (%)**	**Waiting List Mean (SD) or N (%)**	**Pearson Chi^2 p Value**
SEX				
Female	25 (25.5)	14 (26.4)	11 (24.4)	Chi^2 (1) = 0.05 p=0.82
Male	73 (74.5)	39 (73.6)	34 (75.6)	
ETHNIC GROUP				
Caucasian	90 (91.8)	49 (92.5)	41 (91.1)	Chi^2 (1) = 0.06 P=0.81
Black or Other	8 (8.2)	4 (7.5)	4 (8.9)	
MARITAL STATUS				
Married	58 (59.2)	30 (56.6)	28 (62.2)	Chi^2 (2) = 0.98 p=0.61
Divorced	7 (7.1)	5 (9.4)	2 (4.4)	
Single	33 (33.7)	18 (34.0)	15 (33.3)	
Age in years at intervention	30.4 (7.7)	30.8 (8.3)	29.6 (6.9)	t (96)=0.97 P=0.34
SERVICE				
Navy & Royal Marines	1 (1.0)	1 (1.9)	0 (0)	Chi^2 (3) = 2.35 p=0.50
Army	45 (46.0)	22 (41.6)	23 (51.1)	
RAF	51 (52.0)	29 (54.7)	22 (48.9)	
MPGS	1 (1.0)	1 (1.9)	0 (0)	
RANK				
Officer Rank	5 (5.1)	3 (5.7)	2 (4.4)	Chi^2 (2) = 0.08 P=0.96
SNCO Rank	17 (17.4)	9 (17.0)	8 (17.8)	
NCO Rank	76 (77.6)	41 (77.4)	35 (77.8)	
Length of Service in years	10.2 (7.6)	10.8 (8.2)	9.5 (6.8)	t (92) = 0.79 p=0.43

Table 8.4 Diagnostic profile of study subjects, overall and by arm of the trial

Diagnosis	**Total N (%)**	**SMT N (%)**	**Waiting List N (%)**	**Pearson Chi^2 p Value**
Depression F32	4 (4.1%)	2 (3.8%)	2 (4.4%)	**Chi^2 (3) =** 1.75 p=0.63
Recurrent Depression F33	1 (1.0%)	1 (1.9%)	0 (0%)	
Adjustment Disorder F43.2	92 (93.9%)	49 (92.4%)	43 (95.6%)	
Sexual Dysfunction F52	1 (1.0%)	1 (1.9%)	0 (0%)	
Taking psychotropic medication	18 (18.4)	10 (18.9)	8 (17.8)	**Chi^2 (1) =** 0.02 p=0.89

Table 8.5 Caseness of study subjects as determined by main outcome measures, overall and by arm of the trial

Psychometric measure	Total number meeting "caseness" N (%)	SMT number meeting "caseness" N (%)	Waiting List number meeting "caseness" N (%)	Mean (n=98) (95% CI)
GHQ 28 Total Score	80 (82%)	45 (85%)	35 (78%)	12.9 (11.6 to 14.3)
BAI	79 (81%)	40 (75%)	39 (87%)	17.0 (14.9 to 19.2)
BDI-II	79 (81%)	45 (85%)	34 (76%)	23.6 (21.5 to 25.8)

Table 8.6 RCT Main outcome measures

Psychometric measure	Waiting list Mean (SD) (n=45)	Standardised SMT Mean (SD) (n=53)	Standardised SMT versus waiting list mean difference (95% CI)	Standardised SMT change in mean difference (95% CI)
GHQ-28 total score				
Initial	11.9 (7.1)	13.8 (6.5)	1.9 (-0.9 to 4.6)	
6 week	9.4 (7.0)	7.3 (7.4)	-2.1 (-5.0 to 0.8)	-3.9 (-7.1 to -0.8) *
12 week	6.8 (7.0)	6.8 (8.6)	0 (-3.1 to 3.2)	-1.8 (-5.6 to 1.9)
BDI II total score				
Initial	22.4 (11.7)	24.6 (9.8)	2.2 (-2.1 to 6.6)	
6 week	20.7 (13.0)	17.4 (12.1)	-3.3 (-8.3 to 1.7)	-5.5 (-9.8 to 1.3) **
12 week	15.6 (11.9)	14.7 (12.1)	-0.9 (-5.7 to 4.0)	-3.1 (-7.9 to 1.7)
BAI total score				
Initial	18.1 (10.9)	16.2 (10.3)	-1.9 (-6.1 to 2.3)	
6 week	14.8 (13.2)	11.5 (10.6)	-3.6 (-8.1 to 1.4)	-1.4 (-5.2 to 2.3)
12 week	13.4 (13.3)	10.4 (10.1)	-3.0 (-7.7 to 1.7)	-1.1 (-5.3 to 3.0)

* P=0.01
** p=0.01

8.4.4 **Results**

The patient satisfaction survey found that most subjects were male, married, aged between 25 and 44 and were serving in the RAF in the support services. 95% of respondents considered that the format of the standardised SMT was of good quality and 93% thought that its content was of good quality. 77% (70) of the participants were suffering from an adjustment disorder and 14% (13) were suffering from mild depressive disorders. Of the remaining eight (9%), one was suffering from post traumatic stress disorder, one from alcohol misuse, one from sexual dysfunction, one from personality disorder, one from phobia and one from generalised anxiety disorder

The results of the unstandardised SMT study showed that although most attendees (n=90) were diagnosed with adjustment disorders (91%) prior to the study most (57%) met the threshold, as determined by the BDI-II, for a possible depressive disorder by the time they received the unstandardised SMT. This finding was replicated in the RCT where most participants (n=98) were diagnosed with adjustment disorders (94%) prior to the study but most (81%) exceeded the threshold, as determined by the BDI-II, for a depressive disorder during the study.

Most of the participants in the main study (RCT) were male, married and non commissioned officer ranks serving in the RAF. Most of the participants were suffering from adjustment disorders and were not taking any psychotropic medication. There were no statistically significant differences in the diagnostic profile of the two arms of the study. There was no difference in

outcomes between standardised SMT and waiting list controls. However there was a significant improvement in GHQ-28 and BDI-II scores in the standardised SMT group at 6 weeks compared to baseline. This improvement in GHQ-28 and BDI-II scores was no longer significant at 12 weeks. The BAI scores did not show any significant differences compared to baseline at either 6 or 12 weeks. No significant differences were detected in outcomes in the waiting list controls at either 6 or 12 weeks when compared to baseline. The CGI was used for clinical impression only and to ensure that participants were not showing signs of a worsening of their mental health.

Fidelity checks were carried out on 50% of the standardised SMT delivered between 1st September 2010 and 1st September 2013. The standard expected was that 100% of the PowerPoint slides would be presented together with at least 50% of the training notes information (reproduced at Annex **E**). 18 of the standardised SMT held at the Department of Community Mental Health (DCMH) at RAF Brize Norton between 1st September 2010 and 1st September 2013 were assessed by a Consultant Psychiatrist. The standardised SMT was not assessed by video recording which would have been less contaminating. The presence of a Consultant Psychiatrist during fidelity checks could have introduced bias and this was a recognised limitation of the fidelity checks carried out in this study. 100% of the presentations assessed for fidelity by a Consultant Psychiatrist met the above criteria. The results suggested that standardised SMT adhered closely to the training manual.

8.4.5 Summary of Results

The results of the patient satisfaction survey suggested that standardised SMT was acceptable to those who attended it and was a useful precursor to a formal trial of the effectiveness of standardised SMT. Standardised SMT fits well with the Improving Access to Psychological Therapies (IAPT) model of stepped care described at 3.14.4. The results suggested that there was a good chance that participants would engage with the treatment offered.

The main finding in the study (RCT) was no significant difference on the primary or secondary outcome measures between standardised SMT and waiting list controls. There was a significant improvement in GHQ-28 and BDI-II scores in the standardised SMT group compared to waiting list at 6 weeks. This improvement was no longer significant at 12 weeks. The BAI scores did not show any significant differences compared to baseline at either 6 or 12 weeks.

8.5 Summary

This chapter has described the content of the standardised SMT and its usage in mainly RAF attendees who were diagnosed with Adjustment Disorders. The standardised SMT was compared to waiting list controls in a randomised controlled trial. This results of this study supports the view that standardised SMT is acceptable to participants but is not effective in treating active, regular military personnel who had been referred from primary care to

DCMH, RAF Brize Norton with a diagnosis of adjustment disorder or depression. The significance of these results will be discussed in the next chapter.

Chapter 9

Discussion

9.1 Introduction

This Chapter will describe:

- Main findings of the study and how these relate to the literature review (Chapter 4)
- Strengths and limitations of the study
- Implications of this study
- Future research

9.2 Main Findings of the Study

The primary aim of this thesis was to investigate whether standardised Stress Management Training (SMT) had an effect on participants with a diagnosis of anxiety and depression. This was assessed using a Randomised Controlled Trial (RCT), which examined standardised SMT compared to waiting list controls. Secondary aims included a survey of the acceptability of standardised SMT and a retrospective analysis of the sociodemographic, occupational and ICD-10 characteristics of attendees of previous unstandardised Stress Management Training (SMT) in order to provide a comparison to participants in the RCT.

Whilst unstandardised SMT had been delivered at DCMH Brize Norton for many years prior to the compilation of this thesis, the characteristics

of attendees had never been examined. Data from the unstandardised SMT was compared to sociodemographic, occupational and ICD-10 characteristics of participants who attended standardised SMT. Participants in standardised SMT were compared to waiting list controls in an RCT to determine whether standardised SMT had an effect.

The results of the data analysed from the unstandardised SMT showed that the majority of attendees were diagnosed with adjustment disorder (91%) rather than depression. Most attendees (57%) met the threshold, as determined by the BDI-II (59) for a possible depressive disorder by the time they received the unstandardised SMT. It was not clear from the study findings whether attendees may have been misdiagnosed at the point of referral to unstandardised SMT or whether they had deteriorated prior to attending unstandardised SMT and by the time they attended they had become depressed. The results did not provide any information on the effectiveness of unstandardised SMT. The unstandardised SMT was important in informing the development of the standardised SMT and providing sociodemographic, occupational and ICD-10 data, which was compared to similar data from the RCT. The data from the RCT was consistent with data from the unstandardised SMT in suggesting that that whilst most attendees and participants in these studies were diagnosed with anxiety and depression most attendees met the threshold, as determined by the BDI-II (59) for a possible depressive disorder by the time they received the interventions.

The RCT suggested that standardised SMT had a short-term benefit in participants assessed at six weeks who met the threshold, as determined by the BDI-II (59), for a possible depressive disorder. This benefit was not maintained, however, when participants were re-assessed at 12 weeks. The RCT did not show that standardised SMT made any difference to participants who met the threshold, as determined by the BAI (58), for a possible anxiety disorder.

The short term beneficial effect on participants who met the threshold, as determined by the BDI-II (59) for a possible depressive disorder may be because of elements of Behavioural Activation (described at 3.14.2) that were included in the psycho educational component of the stress management training. Behavioural Activation is a National Institute for Health and Clinical Excellence recommended, evidence-based treatment for depression (49). Behavioural Activation has been advocated by Wybrow (2013) (96) as a cost effective treatment for depression in military personnel. Wybrow found that group based Behavioural Activation may build upon service personnel's cultural affinity to teamwork and peer support.

Another reason for the short term beneficial effect on participants who met the threshold, as determined by the BDI-II (59), for a possible depressive disorder may be because of participant’s perception that their symptoms were being taken seriously by the rigorous nature of the reviews held at baseline, 6 and 12 weeks and the administration of the

outcome measures at these time points. These reviews may have been reassuring and an example of a brief intervention in themselves. This short term beneficial effect may be an example of the "The Hawthorne Effect" as described by McCarney *et al* (2008) (97). This effect was first reported following an extensive research programme investigating methods of increasing productivity in the Western Electrical Company's Hawthorne Works in Chicago during the 1920's and 30's. The finding of enduring interest was that no matter what change was introduced to working conditions, the result was increased productivity. The increase in worker productivity seemed to be produced by the psychological stimulus of being singled out and made to feel important.

Although first reported in industrial research, the Hawthorne Effect has implications for clinical research and Braunholtz *et al* (2001) (98) described the Hawthorne Effect in RCT's. They found that there was a positive "trial effect" where participants in RCT's experienced positive outcomes just by taking part in the RCT. However, this positive trial effect is likely to have been present in the control group as well as the intervention arm of the RCT and would not explain the difference between them.

Another possible reason why there was only a short term beneficial effect on participants who met the threshold, as determined by the BDI-II (59) for a possible depressive disorder may be because of illness behaviour in participants. Malingering and factitious disorders have been recognised

in U.S. military personnel (2013) (99) and these conditions have been recognised by Lande and Williams (2013) (100) as potential barriers to therapeutic improvement. It is possible that active regular military personnel who participated in the study presented in this thesis may have exhibited "secondary gain" in not maintaining a therapeutic improvement in order to avoid work, postings or deployment. Secondary gain has been defined by the Shorter Oxford Dictionary (2) as "any advantage, as increased attention, disability benefits, or release from unpleasant responsibilities, obtained as a result of having an illness". Whilst secondary gain may explain why there is only a short term beneficial effect on participants who met the threshold, as determined by the BDI-II (59) for a possible depressive disorder it does not explain why there was a difference between participants in the two arms of the study. The recognition of potential barriers to therapeutic improvement is important in occupational settings as they can lead to long term sick leave as suggested by the results of the HSE presented in chapter **3** (9).

9.3 How These Results Fit with the Existing Literature

The findings of the standardised SMT patient satisfaction survey presented in chapter **8** suggested that standardised SMT was acceptable to those who attended it and was reported by Hicks *et al* (2013) (101). This finding provides empirical evidence as suggested by Wessely (2008) (62) for the acceptability of psychoeducation as an intervention to treat patients diagnosed with anxiety and depression. This finding was found

to be consistent with the earlier findings of Candy (2004) (67) who found that psychoeducation was acceptable to participants diagnosed with glandular fever.

The reason why psychoeducation was found to be acceptable in these differing settings may be because each intervention was specifically targeted to participants who were already symptomatic. The psychoeducation was brief and focussed on the cause of the psychological symptoms. Generic advice was given in each to support the notion of rehabilitation and recovery. In a military population a positive "can do" attitude often fits with the mindset of military personnel and is likely to have been congruent with the military ethos as detailed in the RAF Stress Management Policy (11).

The standardised SMT patient satisfaction survey results supported the findings by Greenberg *et al* (2009) that suggested that educational stress briefs held in the Royal Navy were acceptable when relevant to the target audience (66). The concept of the acceptability of stress management interventions has depended on feedback surveys, which have asked about participant's perception of the quality of the intervention and the course content. The acceptability of stress management interventions is, therefore, a subjective impression on the part of the participant. The results of patient satisfaction surveys can be used to inform the development of future stress management interventions to provide psycho education that is understandable to attendees.

The RCT described in this thesis met the aims of the original research question in showing that standardised SMT provided a short-term benefit in participants who met the threshold, as determined by the BDI-II (59) for a possible depressive disorder rather than participants who met the threshold, as determined by the BAI (58) for a possible anxiety disorder. The main study findings described in this thesis are consistent with those of Kitchiner *et al* (2009) (72), Pruitt *et al* (1991) (75) and Cigrang *et al* (2000) (70) in showing no effect in participants who met the threshold, as determined by the BAI (58) for a possible anxiety disorder. This effect was no longer present at 12 weeks and is in contrast to the findings in the study by Horrell *et al* (2014) (76) who found that participants attending a one day cognitive behavioural therapy self-confidence workshop for people with depression and anxiety was effective at 12 weeks.

The RCT findings in this thesis are consistent with the findings of Kitchiner *et al* (2009) (72). One of the reasons is likely to be that both of these studies examined participants with a primary diagnosis of anxiety rather than depression. Studies of participants who were depressed such as that by Horrell *et al* (2014) (76) showed better outcomes than studies that considered participants who were anxious. Interestingly both the RCT findings in this thesis and the study by Kitchiner *et al* (2009) (72) identified participants who met the threshold, as determined by the BDI-II (59) for a possible depressive disorder despite most participants having been diagnosed with anxiety prior to the interventions described. This finding suggests that if participants were indeed depressed rather than

anxious then they should be treated as per the National Institute for Health and Clinical Excellence (NICE) guidelines for depression (49) rather than anxiety (48). Only 18% of participants who took part in the RCT comparing standardised SMT to waiting list were in fact taking antidepressant medication and they may have been under treated.

The finding of the RCT described in this thesis is in contrast to the results of studies carried out in primary care such as White (1997) which suggested that "stress control" is effective (64). Stress control was described as a taught generic anxiety management package using cognitive behavioural techniques that could be delivered to up to 60 individuals at a time. The findings of the RCT presented in this thesis does not support the provision of SMT in secondary care settings such as a DCMH where the stigma of attending a group based treatment may be increased compared to primary care settings. This may help explain the difference in efficacy between SMT carried out in different settings.

The findings of the RCT described in this thesis may also be explained by participants not feeling comfortable in a group setting, which could actually increase anxiety. This potential effect was described by White (1997) (64) before he introduced large group therapy "stress control". White described "stress control" used in his study as being unlike traditional group therapy in that attendees were explicitly told that they did not need to speak if they did not want to and if they did they should not discuss personal problems. White found that "stress control" was

effective in treating generalised anxiety and panic disorder. The "stress control" groups were delivered to up to 60 attendees compared to the standardised SMT described in this thesis which was delivered to smaller groups of up to 16 participants. Standardised SMT also used smaller "break out" groups of 3-4 participants to discuss specific stress related issues which was not included in "stress control". The difference in the group size and format may explain the different outcomes found in this study and the findings of White (1997).

9.4 Strengths and Limitations

There are several strengths to this study. The effectiveness of standardised Stress Management Training (SMT) was investigated in the form of a rigorous clinical trial that extended a preliminary randomised controlled trial (RCT). The study was registered with the International Standard Randomised Control Trials Number Register [ISRCTN21392756] and complied with the Consolidated Standards of Reporting Trials (CONSORT) guidelines for the reporting of clinical trials as described by Schulz *et al* (2011) (102).

The RCT was conducted in one centre with a dedicated stress management team that delivered a consistent standardised SMT as determined by regular fidelity checks. The RCT was registered with the Clinical Trials Unit (CTU) at King's College London for the

randomisation of participants. The randomisation of participants in his study was robust and was unlikely to have been subject to bias.

Despite poor recruitment, 98 participants completed the RCT with a relatively low drop out rate of 22% compared to 52% in the study reported by Kitchiner *et al* (2009) (72). The low drop out rate in the main study presented in this thesis might be explained by the results of the satisfaction survey, which showed that the standardised SMT was acceptable to those who attended it. Attendance at military appointments is mandatory and enforceable by military discipline. Military personnel can be subject to disciplinary action if they did not attend whereas participants in the Kitchiner *et al* study were civilians and not subject to the same degree of expectation.

Limitations of this study include that the satisfaction survey was not able to address factors such as rank or gender that may predict poor satisfaction due to the low numbers who expressed dissatisfaction. Whilst the main study benefitted from a robust trial design, recruitment to the trial was disappointing and the RCT was underpowered. The study only recruited 98 participants which was less than the 260 participants needed in the original power calculation. The sample size may not have been large enough to show small but significant differences between the two arms of the trial. Although attempts were made to improve recruitment by involving other research centres this was not possible. Both the Army DCMH at Tidworth and the Royal Navy DCMH at

Portsmouth declined to take part in this study. The study was carried out at just one DCMH at RAF Brize Norton and the study remained single rather than multicentred.

A further limitation of this study was that no blinding was possible when participants were followed up at 6 weeks and 12 weeks. This lack of blinding may have biased the investigator when outcomes were measured particularly on the CGI (82). The follow up period was relatively short with only a 6 and 12 week follow up compared to follow up at 1 month, 3 months and 6 months described by Kitchiner *et al* (72). The short period of follow up limited the ability of the main study to comment on longer term outcomes.

Whilst this study excluded participants diagnosed with alcohol disorders, the study did not explicitly exclude the possibility of comorbid alcohol disorders in study participants. This study presented data on active, regular military participants who are known to be at relative risk of alcohol misuse (Jones et al 2011) (103). The absence of an alcohol screening questionnaire in this study may have led to the non identification of some participants who may have had a comorbid diagnosis of alcohol misuse.

This study did not explore maladaptive or negative strategies that maintain the effects of stress such as smoking, alcohol, caffeine intake and stopping exercise. The study also did not explore resilience or

burnout and did not consider occupational outcomes that would have been of interest to the employer. There are benefits to both the employee and employer of a fully fit workforce and an exploration of occupational outcomes following SMT would have provided such data.

9.5 Implications of this Research

This study suggests that standardised SMT in the format delivered at DCMH, RAF Brize Norton should not be offered routinely to active, regular military personnel with a diagnosis of depression and anxiety. This has implications for the wider military and suggests that similar SMT should not be routinely undertaken at other military DCMH's to treat active, regular military personnel with a diagnosis of depression and anxiety. This finding is important in ensuring that other DCMH's do not waste limited resources on interventions that are ineffective.

SMT was carried out at DCMH, RAF Brize Norton from 1995 until the findings of the RCT presented in this thesis were known in 2014. The findings of the RCT were discussed at a management meeting at DCMH, Brize Norton in July 2014 and a decision was made that in the absence of evidence that standardised SMT was effective it should not be carried out at DCMH, RAF Brize Norton in the future. Standardised SMT was therefore stopped and patients under the care of DCMH Brize Norton who were diagnosed with anxiety and depression were offered evidence based interventions such as CBT instead.

It is interesting as to why the military has used non-evidence based treatments such as SMT despite a lack of evidence to its effectiveness. This also applies to the use of flying phobia courses, which were provided to active regular military personnel at DCMH, RAF Brize Norton. These courses were delivered to active regular military personnel from the Royal Navy, Army and Royal Air Force and consisted of a week's intensive group based intervention, which provided psycho-education and a flight in a military aircraft designed to desensitise attendees to their phobia. The flying phobia courses were never evaluated and were not evidence based. Despite the lack of empirical evidence they were provided every 6 months from 1995 to 2013. The courses were only stopped due to a lack of staff to provide them rather than evidence that they did not work. The flying phobia courses were provided on the recommendation of the Consultant Advisor (Psychiatry) RAF who was a senior rank (Group Captain) in the RAF. The provision of such an intervention is likely to be an example of the perpetuation of the "perceived wisdom" of providing psychoeducation as a "good thing" rather than a scientific evaluation of the outcomes of treatment.

This study questions the utility of providing standardised SMT as a group treatment for anxiety and depression beyond the military setting. This is in contrast with the stepped care approach of the Improving Access to Psychological Therapies (IAPT) service (described at 3.14.4). Step two of the IAPT approach recommends psychoeducation as a treatment for anxiety and is also recommended by NICE guidelines for the treatment

of anxiety (48). The results of the RCT presented in this thesis do not support the effectiveness of SMT in a wider setting nor its continued use.

There has been debate about the use of non-evidence based interventions in large organisations such as the NHS and why they continue to be used despite a lack of evidence. Sturt *et al* (2012) (104) conducted a systematic review of the effects of Neurolinguistic Programming (NLP) on health outcomes. They found, via a Freedom of Information request, that the NHS had spent £802,468 on NLP based treatments over a three year period, despite limited evidence supporting its use. Their study concluded that there is insufficient evidence to support the allocation of NHS resources to NLP activities outside of research activities. Their conclusion reflected the limited quantity and quality of NLP research, rather than robust evidence of no effect.

Sutherland and Cooper (2000) argued that without an organisational approach to stress management and an organisational endorsement for change that stress management interventions may fail (29). Grol *et al* (2003) described the difficulties that can occur in the effective implementation of changes in patients' care from best evidence to best practice (105). Sometimes evidence is lacking that an intervention works and can lead to an assumption that an intervention is effective because it has always been used. Such received wisdom and good intention in the absence of evidence has been challenged by Macintyre and Pettigrew (2000) (106) as a barrier to change. A barrier to change can include the

inertia of the organisation particularly if it is a large organisation employing many employees such as the military. In order for an organisation to change, robust evidence provided by a centre of academic excellence can provide the catalyst needed to effect a lasting change.

An example of robust evidence for organisational change was produced following the first Gulf War in 1990/91 when there was debate about the origins of a possible "Gulf War Syndrome". As a result the Gulf War Illnesses Research Unit was established at King's College in 1996 and this became the King's Centre for Military Health Research (KCMHR) in 2004. KCMHR is independent of the Ministry of Defence and their work has helped shape government policy towards military personnel. Ismail *et al* (1999) published findings from research carried out at KCMHR which did not support a unique Gulf War Syndrome (107). This finding has been influential in informing future management of military personnel particularly in the light of further conflict in the Middle East.

The study presented in this thesis has been conducted through the Academic Department of Military Mental Health (ADMMH), which is funded by the Ministry of Defence and collaborates directly with KCMHR. The findings presented in this thesis has provided evidence to inform future treatment of military personnel.

9.6 Future Work

The results of these studies strongly suggest that future research should focus on whether standardised SMT may be effective for clinical conditions other than anxiety and depression, such as post-traumatic stress disorder. Standardised SMT delivered at the Department of Community Mental Health (DCMH) RAF Brize Norton was a group based anxiety intervention and was an example of a tertiary stress prevention intervention (those designed to help individuals already suffering from stress related symptoms). Future standardised SMT could focus on secondary interventions (those which help individuals manage stress without altering the individual stressors). Such interventions could promote help seeking behaviour and help prevent those with early symptoms of anxiety progressing to an established disorder needing treatment. Standardised SMT could help individuals identify stress and the effects on themselves and would be useful in improving the individual's coping skills.

Future research should focus on the format of the SMT and whether SMT could become effective if the format and content of the standardised SMT presented in this thesis was modified. The importance of deciding where a group treatment is held may remove the possibility of stigma in attendees in secondary care settings rather than in primary care where the SMT may be more acceptable and effective.

The stress control studies of White (1997) suggested that psychoeducation may be effective if presented in primary care or non clinical settings such as off base or at the HIVE (Forces Information Centre). The HIVE is not an acronym but a suggestion that the HIVE should act like a beehive and could act as a centre for psychoeducation. Such stress control groups, as advocated by White, could be trialled with a military population to see whether the benefits recorded in a civilian population could be replicated in a military one. If the stress control interventions are found to be ineffective in a military population then a different intervention could be designed and piloted to look for evidence of an effect.

The study findings presented in this thesis found that attendees may have been misdiagnosed at the point of referral to DCMH, Brize Norton may have got worse prior to attending unstandardised SMT and by the time they attended they had become depressed. Further research could focus on the accuracy of diagnoses made by DCMH staff.

The study presented in this thesis does not address whether standardised SMT is a cost effective psychological or occupational intervention. Further research could focus on the economic benefit of standardised SMT as a cost effective treatment for depression as suggested by Horrell *et al* (71). Standardised SMT could be compared to more labour intensive interventions such as 1:1 sessions with a CMHN. Such research could inform the military as to whether stepped care models such as that

described by McCrone (2013) could provide a cost effective treatment for service personnel in other military DCMHs (108).

9.7 Conclusion

In conclusion, the study described in this thesis suggests that standardised SMT may have a short term beneficial effect in the treatment of participants who met the threshold, as determined by the BDI-II (59), for a possible depressive disorder rather than participants who met the threshold, as determined by the BAI (58), for a possible anxiety disorder.

The findings of the study presented in this thesis do not support the continued use of SMT within the military or the wider adoption of standardised SMT to treat active, regular military personnel with diagnoses of anxiety or depressive disorders. The military may wish to review its current use of standardised SMT and/or modify and improve the standardised SMT to see if the beneficial effect on participants with high BDI-II (59) scores can be maintained or focus instead on primary and secondary stress management interventions in the future.

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Annexes

Annex A: CONSENT FORM FOR PARTICIPANTS IN RESEARCH STUDIES

Title of Study: Standardised Stress Management Mental Health Training: does it have a beneficial effect?

Ministry of Defence Research Ethics Committee Reference: 101 /Gen/09

- **The nature, aims and risks of the research have been explained to me. I have read and understood the Participant Information Sheet and understand what is expected of me. All my questions have been answered fully to my satisfaction.**

- **I understand that if I decide at any time during the research that I no longer wish to take part in this project, I can notify the researchers involved and be withdrawn from it immediately without having to give a reason. I also understand that I may be withdrawn from it at any time, and that in neither case will this be held against me in subsequent dealings with the Ministry of Defence.**

- **I agree to allow the research team access to my medical records held at the Department of Community Mental Health at RAF Brize Norton and on the electronic Defence Medical Information Capability Programme (DMICP).**

- **I consent to the processing of my personal information for the purposes of this research study. I understand that such information will be treated as strictly confidential and handled in accordance with the provisions of the Data Protection Act 1998.**

- **I agree to volunteer as a participant for the study described in the information sheet and give full consent.**

- **This consent is only to take part in the study described in the Participant Information Sheet attached and shall not be taken to mean my consent to take part in any other study that is different from that detailed here.**

Participant's Statement:

I _____

agree that the research project named above has been explained to me to my satisfaction and I agree to take part in the study. I have read both the notes written above and the Participant Information Sheet about the project, and understand what the research study involves.

Signed Date

Witness Name

Signature

Investigator's Statement:

I _____

confirm that I have carefully explained the nature, demands and any foreseeable risks (where applicable) of the proposed research to the Participant.

Signed Date

AUTHORISING SIGNATURES

The information supplied above is to the best of my knowledge and belief accurate. I clearly understand my obligations and the rights of research participants, particularly concerning recruitment of participants and obtaining valid consent.

Signature of Principal Investigator

…… Date

Name and contact details of Independent Medical Officer (if appropriate):

Wg Cdr Asha Pook
Consultant Psychiatrist
DCMH RAF Cranwell
Sleaford
Lincs
NG34 8HB
Tel: 01400 267369
Tel: GPTN 95751 7369
ashapook@cranwell.raf.mod.uk

Name and contact details of Principal Investigator:

Dr Trevor Hicks
Department of Community Mental Health
RAF Brize Norton
Carterton
Oxon OX18 3LX
Tel: 01993 897999
Tel: GPTN 95461 6679
trevor@hicks64.freeserve.co.uk

Annex B: PARTICIPANT INFORMATION SHEET

Title of Study: Standardised Stress Management Mental Health Training: does it have a beneficial effect?

We would like to invite you to take part in this research project being undertaken by Dr Trevor Hicks of the Department of Community Mental Health, RAF Brize Norton and Dr Nicola Fear of the Academic Centre for Defence Mental Health, King's College London. This project is part of Dr Hicks' Research Doctorate (MD (Res)). You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what taking part will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

Why are we carrying out this study?

The Department of Community Mental Health at RAF Brize Norton has for a number of years run Stress Management Mental Health Training courses which are designed to help service men and women who may be suffering from the effects of stress. Although the courses are based on good science, no one had ever checked to see if these courses actually make any difference to the mental health of those who attend. This study aims to find out whether these courses are helpful in reducing levels of stress with a corresponding improvement in the mental health of those who attend. For that reason, some of you will receive the stress management course and others won't so that we can compare the two groups.

What will taking part in the study involve?

If you choose to take part in the study you will stand an even chance of either receiving the Stress Management Mental Health Training or of being placed on to a waiting list. Those of you who are on the waiting list will be given the option to receive the Stress Management Mental Health Training at the end of this study so you will not miss out but delay. Details will be given at the final study visit 5.

If you choose to take part in the study you will be asked to complete 3 questionnaires and a repeat in about 6 weeks and 3 months. The questionnaires ask about your wellbeing and will take about 20 minutes to complete. We would also like your permission to access your medical records so that we can follow up your health status.

You will not be forced to take part in the study and you may at any time withdraw from the study without giving a reason. If you ever require any further explanation, please do not hesitate to ask. In total there will be five visits including this one.

Who will get to see the information that I give in the questionnaires and how will my information be stored?

Only the research team will have access to the questionnaires which will be stored anonymously, and all information will be stored securely. However, we will never release data which contains any information that would identify you. We will not pass your contact details to any third parties. The overall findings of the study will be published, but individual responses will be entirely confidential. Records will be held for 20 years and you have the right of access to your records at any time. You are free to withdraw from the study at any time.

Has this study been reviewed?

The study protocol has been reviewed by the Ministry of Defence Research Ethics Committee (MoDREC) (reference number: 101 /Gen/09).

An independent medical officer can be contacted to discuss the study. Her sole function is to act independently of the study team to ensure your safety and well-being. She may terminate your participation in the trial on medical grounds at any time, and you may consult with her during the hours of 09.00 – 17.00 Monday to Friday.

Name and contact details of Independent Medical Officer:

Wg Cdr Asha Pook
Consultant Psychiatrist
DCMH RAF Cranwell
Sleaford
Lincs
NG34 8HB
Tel: 01400 267369
Tel: GPTN 95751 7369
ashapook@cranwell.raf.mod.uk

Name and contact details of Principal Investigator:

Dr Trevor Hicks
Department of Community Mental Health
RAF Brize Norton
Carterton
Oxon OX18 3LX
Tel: 01993 897999
Tel: GPTN 95461 6679
trevor@hicks64.freeserve.co.uk

Annex C: STUDY SCHEDULE

Visit 1	Visit 2	Visit 3	Visit 4
Interview	Interview	Interview	Interview
Demographics	Informed Consent		
Study Information	Outcome Measures GHQ- 28 BDI BAI CGI	Outcome Measures GHQ-28 BDI BAI CGI	Outcome Measures GHQ-28 BDI BAI CGI
	Concordance	Concordance	Concordance

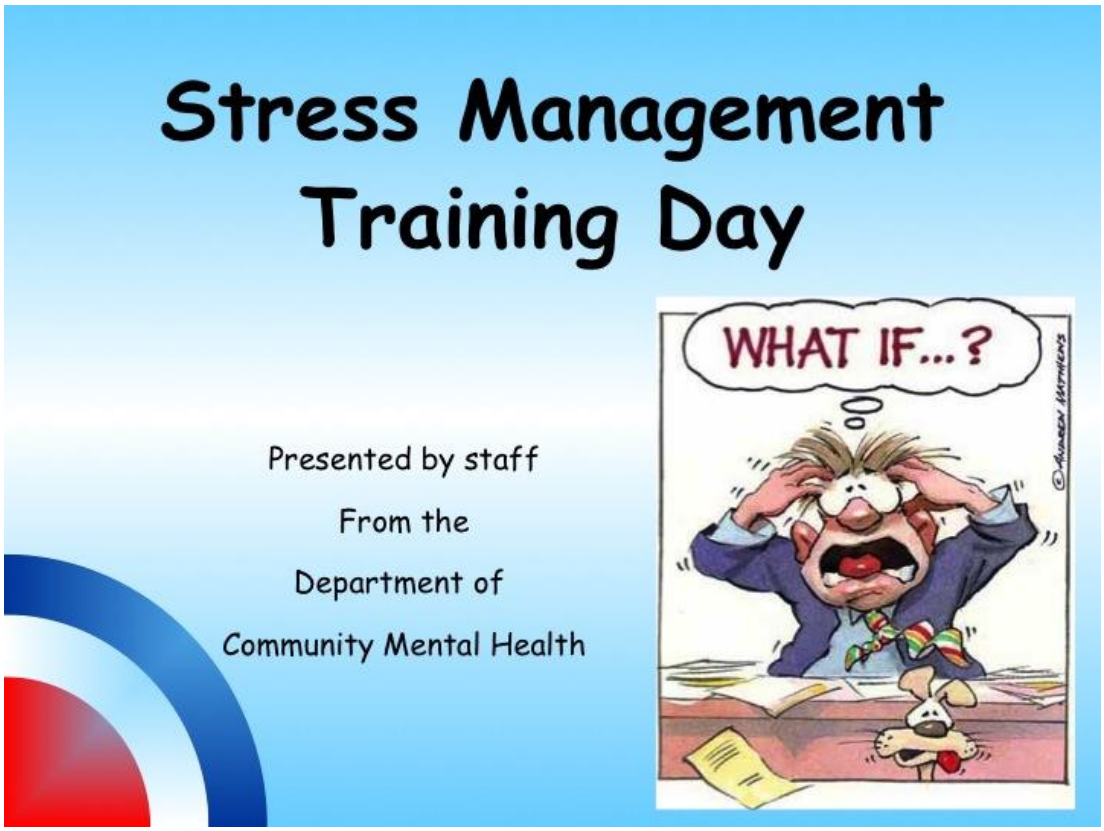
Annex D: TIMETABLE OF STANDARDISED STRESS MANAGEMENT MENTAL HEALTH TRAINING HELD AT DCMH RAF BRIZE NORTON

Timetable

0900 – 0915	Arrival & Registration
0915 – 0930	Housekeeping & Introduction
0930 – 0945	*Break out session*
0945 – 1015	**What is Stress?**
1015 – 1045	*Break out session*
1045 – 1115	**Causes of Stress**
1115 – 1130	*Coffee Break*
1130 – 1200	*Break out session*
1200 - 1230	**The Problems caused by stress**
1230 – 1300	*Break out session*
1300 – 1330	**How to recognise stress**
1330 – *1400*	*Lunch*
1400 – 1430	*Break out session*
1430 – 1500	**Stress Management techniques**
1500 – 1530	**L.E.S.S.O.N Plan**
1530 – 1600	*Coffee Break*
1600 – 1630	**Relaxation exercise**
1630 – 1700	**Summary & Feedback**

Annex E: STANDARDISED STRESS MANAGEMENT MENTAL HEALTH TRAINING (INTERVENTION)

PowerPoint slide 1



Notes:

A Role Call should have been taken and each participant is to have completed a BAI.

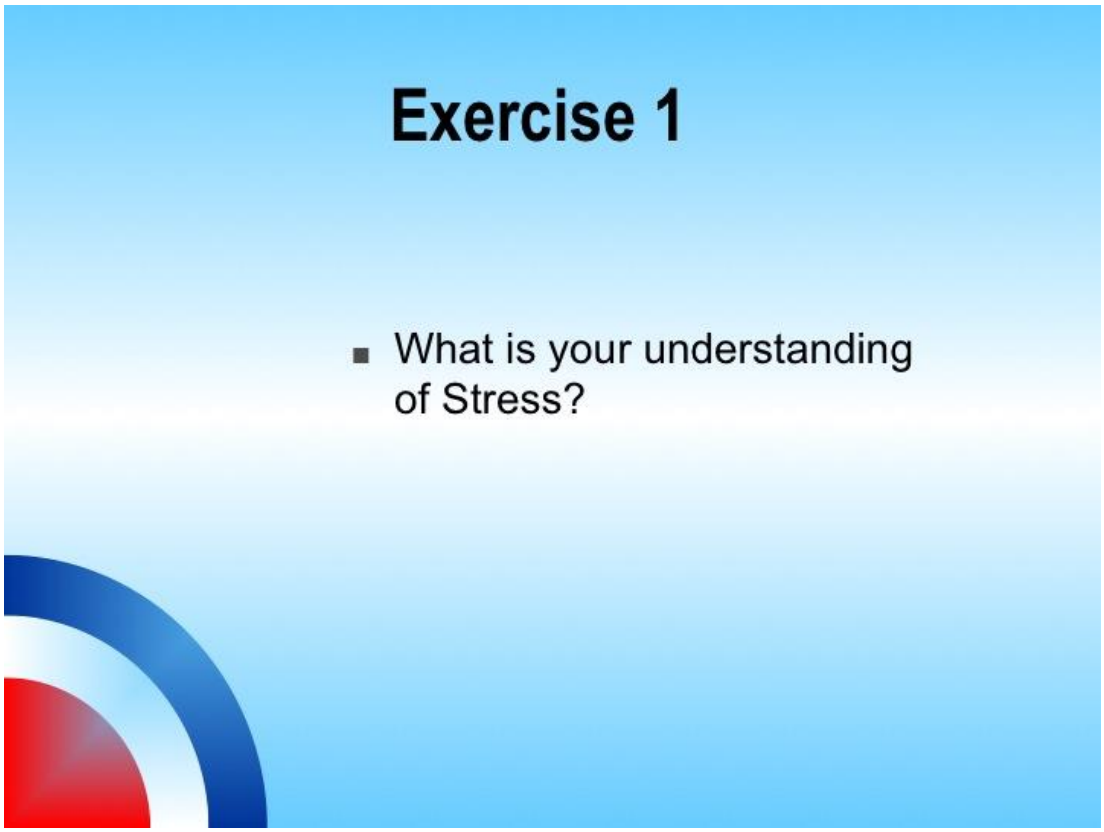
- Welcome everyone to the Stress Management Day.
- Introduce yourself and what you do.

PowerPoint slide 2

Notes:

- Plan for the day!!
- Housekeeping – don't forget to mention the location of the toilets, the fire exits and the smoking area. Also mention about tea and coffee facilities in the waiting room and feel free to bring drinks into the room.
- Confidentiality – We ask that you respect each others confidentiality and don't take what's said in this room outside of this room.
- We will be covering these today (Read out bullet points) but first introductions! Ask for participants name, where they are from and what they do.

PowerPoint slide 3

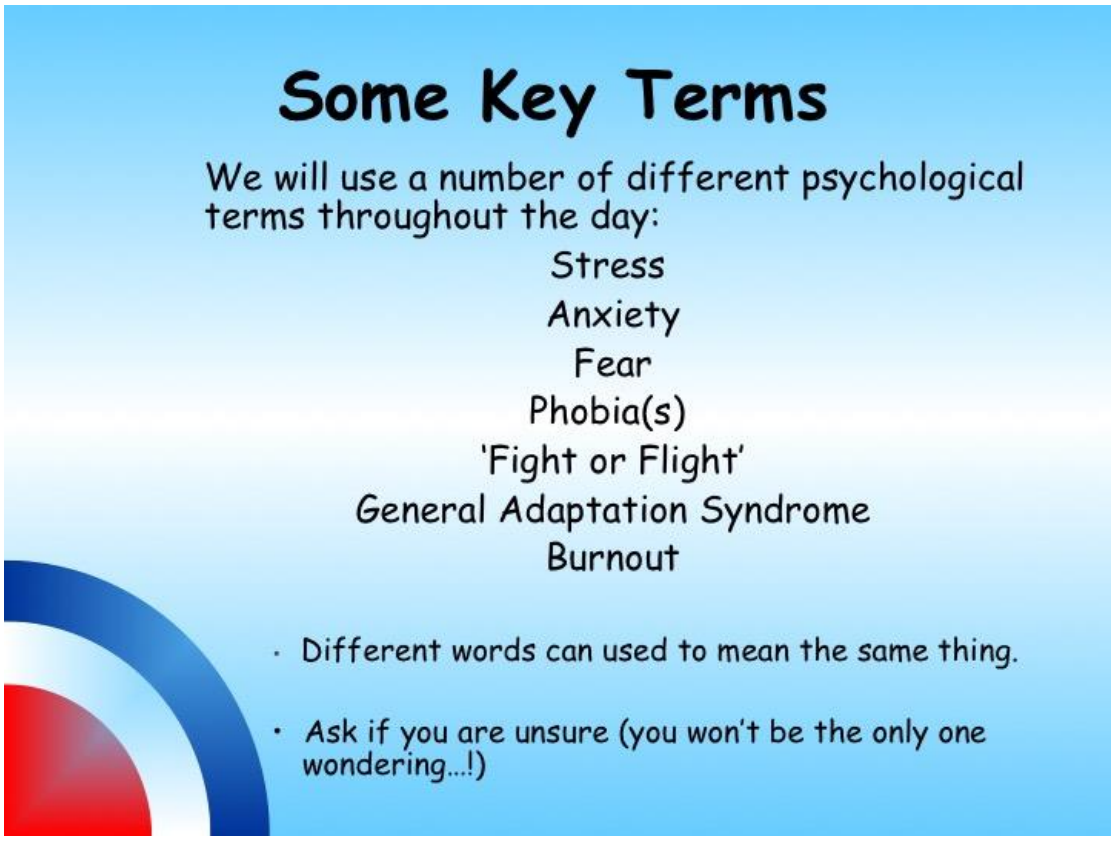


Notes:

First Exercise

- Break into groups of around 3-4 people.
- Pass out pens and paper ‘We’re going to get you working straight away!’
- Break down that they need to cover causes, what they think stress is, symptoms etc.
- Hold up the paper from each group and get one of them to feedback. Expand and discuss – they may have a lot of similar stuff, point this out!

PowerPoint slide 4



Notes:

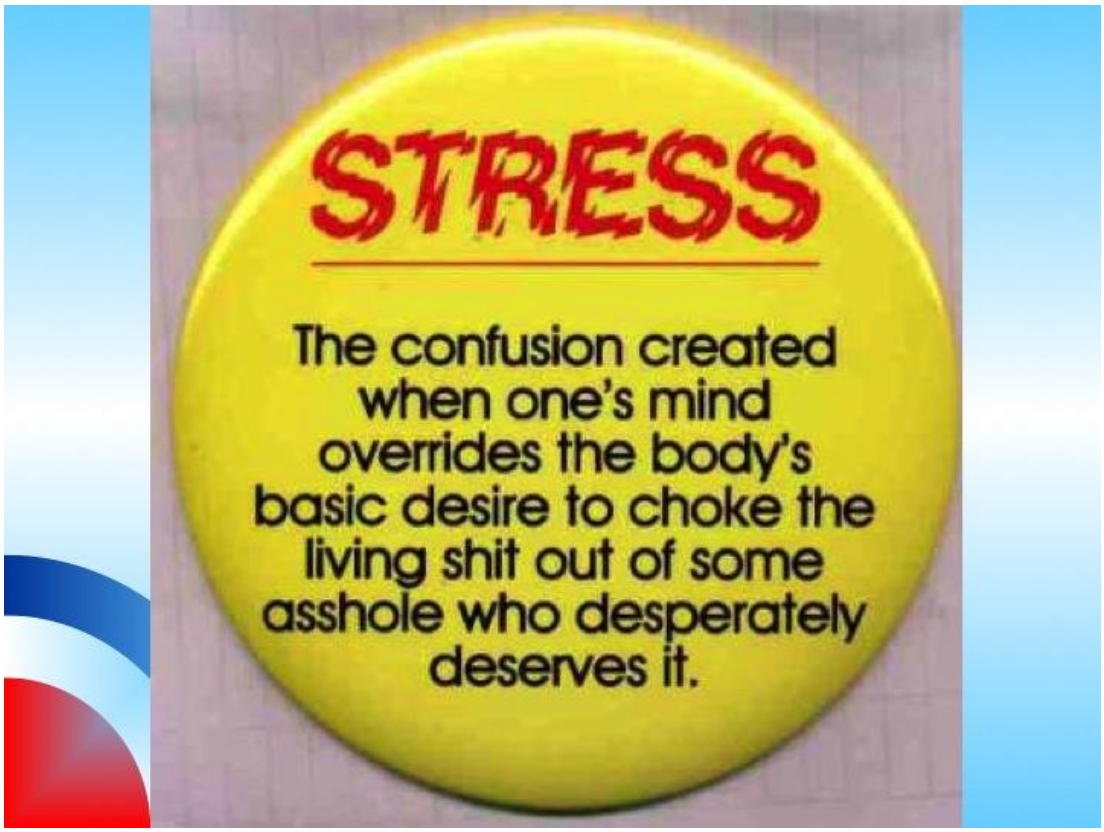
Read through.

State that they pretty much mean the same thing.

Use this opportunity to establish whether anyone has been referred for Flying Phobia
If YES – State that this will apply to them and that they will have to remember how they feel prior to boarding an aircraft and that it is that feeling we will be working on today.

Read out the last line and emphasise this – we are trying to encourage them to speak out and discuss things.

PowerPoint slide 5

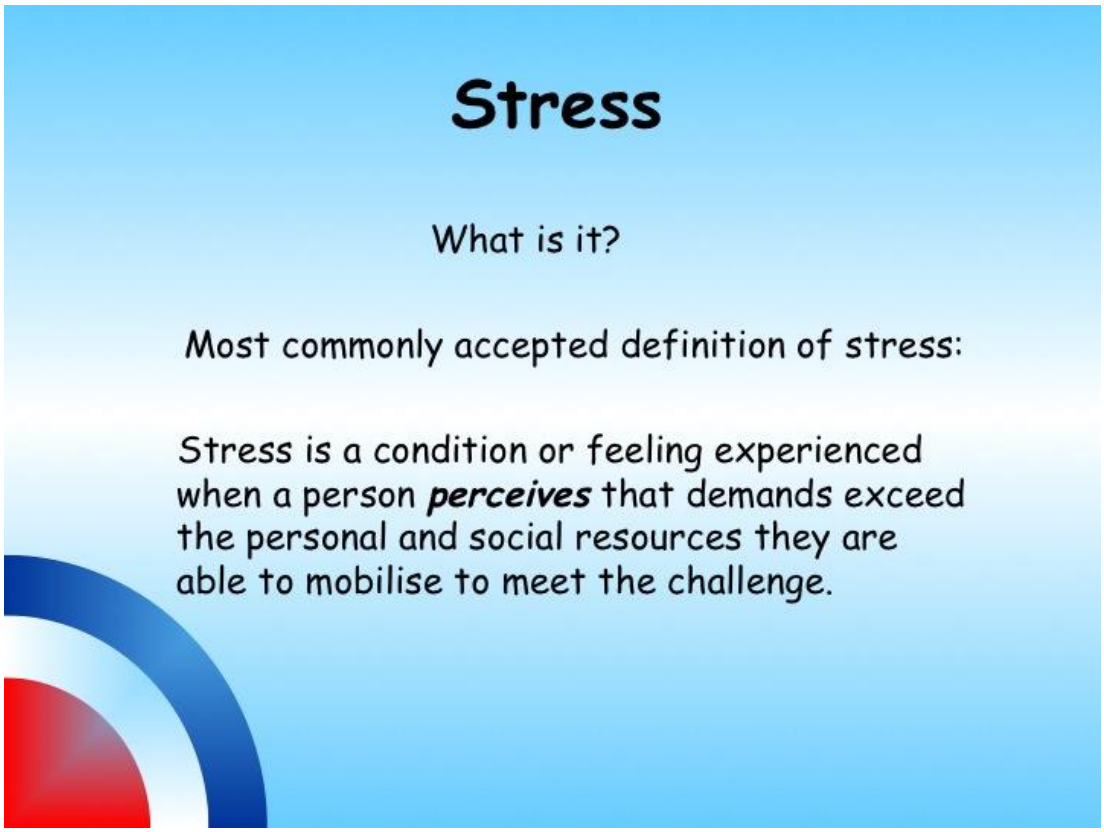


Notes:

Leave audience to read through this definition.

'Our preferred definition of stress!'

PowerPoint slide 6



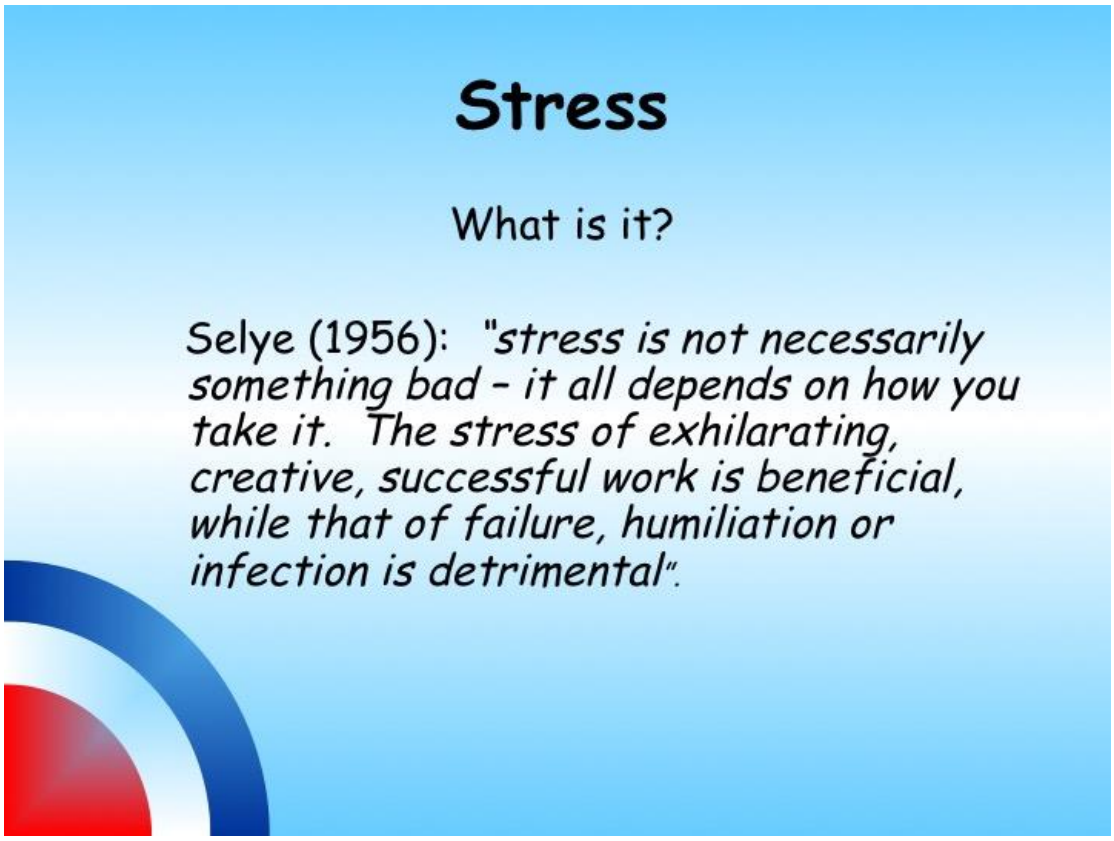
Notes:

Ok so this is the more commonly accepted definition of stress.

Read through it and put emphasis on the word "perceives".

The key word is "perceives". It is important to remember that we all perceive things differently so for example what I find stressful someone else may not. It's how we perceive things.

PowerPoint slide 7



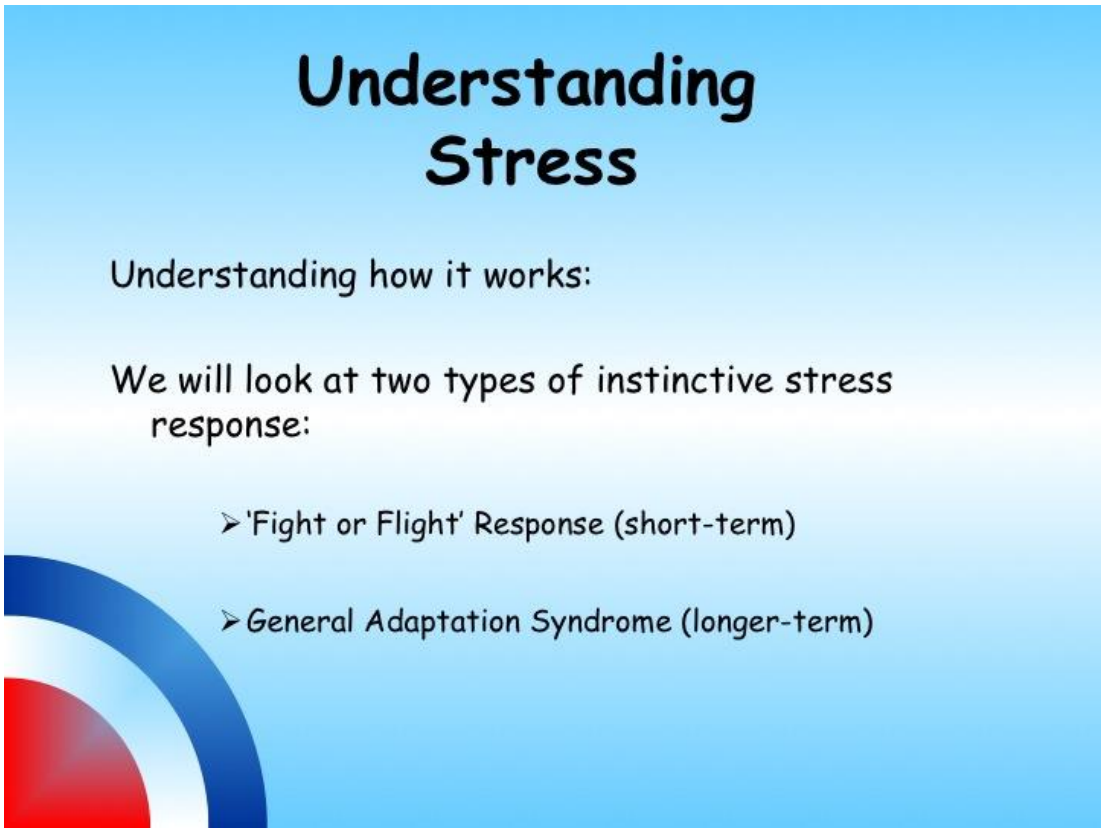
Notes:

This is another definition of stress that is commonly accepted. Written by Selye who discovered fight or flight.

Read through the definition.

We need stress to program at a higher level and some stress in our lives is considered normal and healthy. It is what motivates us in a good days work and keeps us going.

PowerPoint slide 8



Notes:

Read out the 2 stress response and ask if anyone has heard of them.

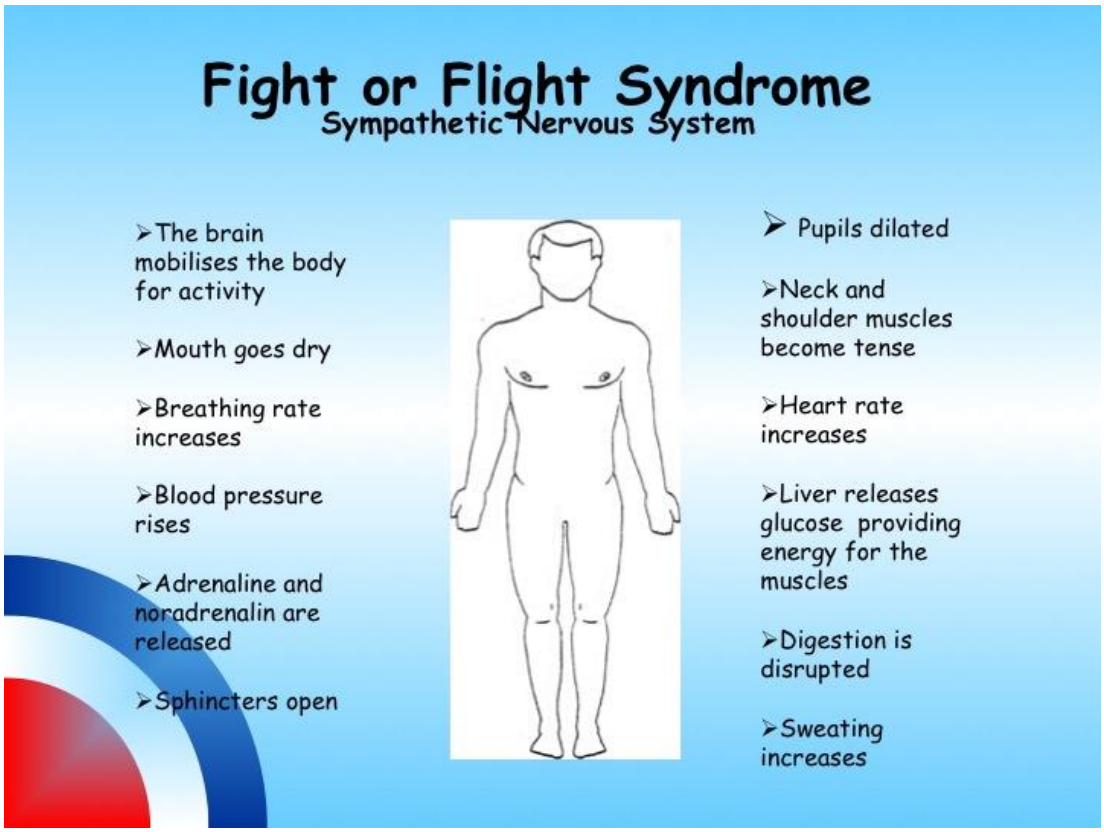
PowerPoint slide 9

Notes:

Fight or flight.

Describe fight or flight – It is an automatic response that we have no control over. It developed from when we were cave men and the things that caused stress and the ways of dealing with stress were very different than they are today. Early humans had to deal with life or death situations that demanded immediate physical reactions. Most stress situations that we face today are of a different type. When confronted by a sabre-toothed tiger for example, our early ancestors had two options; to either run or fight. In order to do this, a complex set of bodily reactions must be activated.

PowerPoint slide 10



Notes:

So this is what happens to the body in fight or flight.

- Read through the slide. Expanding and explaining.
- The brain mobilises the body for activity – As briefly touched upon on the previous slide. It goes into this automatic system 'fight or flight' or the medical term the "sympathetic nervous system".
- Mouth goes dry – The body stops the function it does not deem to be apart of this flight or fight system.
- Breathing rate increases – Increase the oxygen supply to the muscles preparing you to either fight or run away.
- Adrenaline and noradrenalin are released – The hormones that kick start the whole process and get your body reacting to the stressor.
- Sphincters open – We suddenly feel like we need to go to the toilet as the body is trying to make itself lighter again in preparation to fight or run away.
- ➢ Pupils dilated – Our vision becomes sharper and we are able to see more clearly.
- ➢ Neck and shoulder muscles become tense – This is where we hold a lot of our stress and it can cause tension/stress headaches.
- ➢ Heart rate increases – Pushing the oxygen around to our muscles.
- ➢ Liver releases glucose providing energy for the muscles.

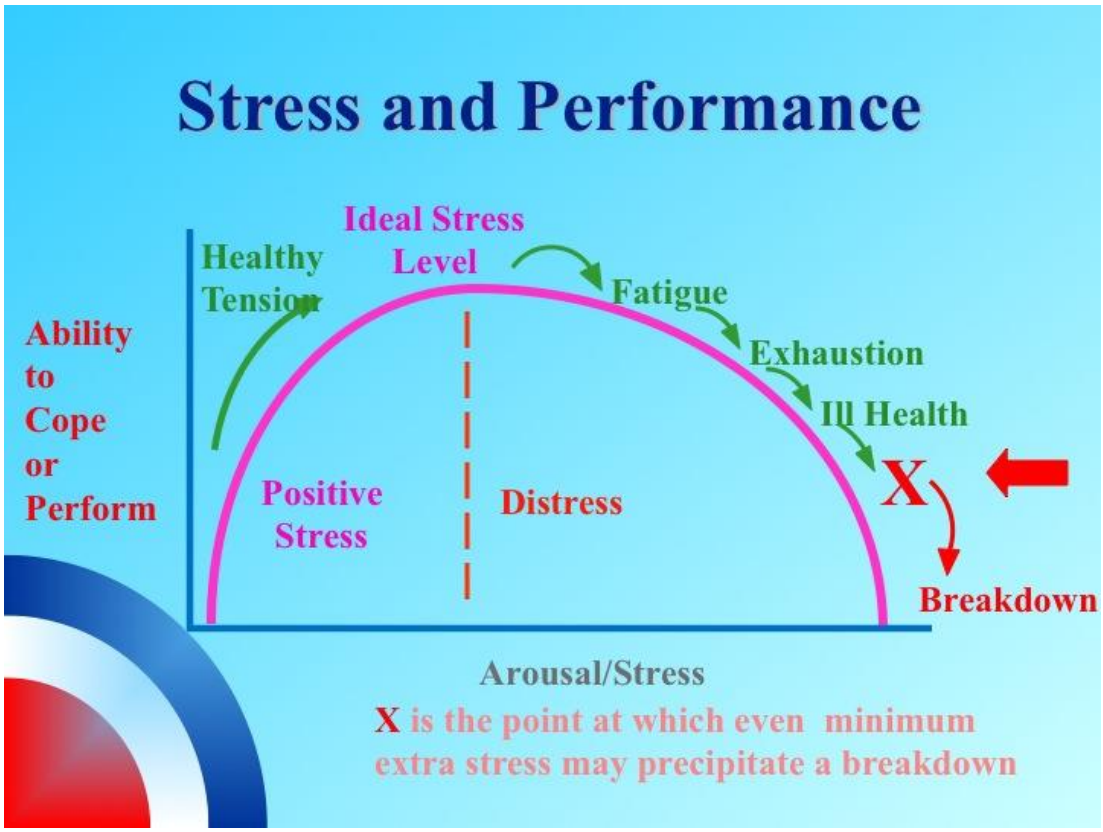
- Digestion is disrupted – Again is seen as a non vital mechanism so the body puts its energy into the other functions it deems more life saving. But that is often the butterflies that you get in your stomach when you feel anxious.
- Sweating increases.

PowerPoint slide 11

Notes:

Where we have just covered the short term effect of stress this is what happens over a longer period so… (Read out slide).

PowerPoint slide 12

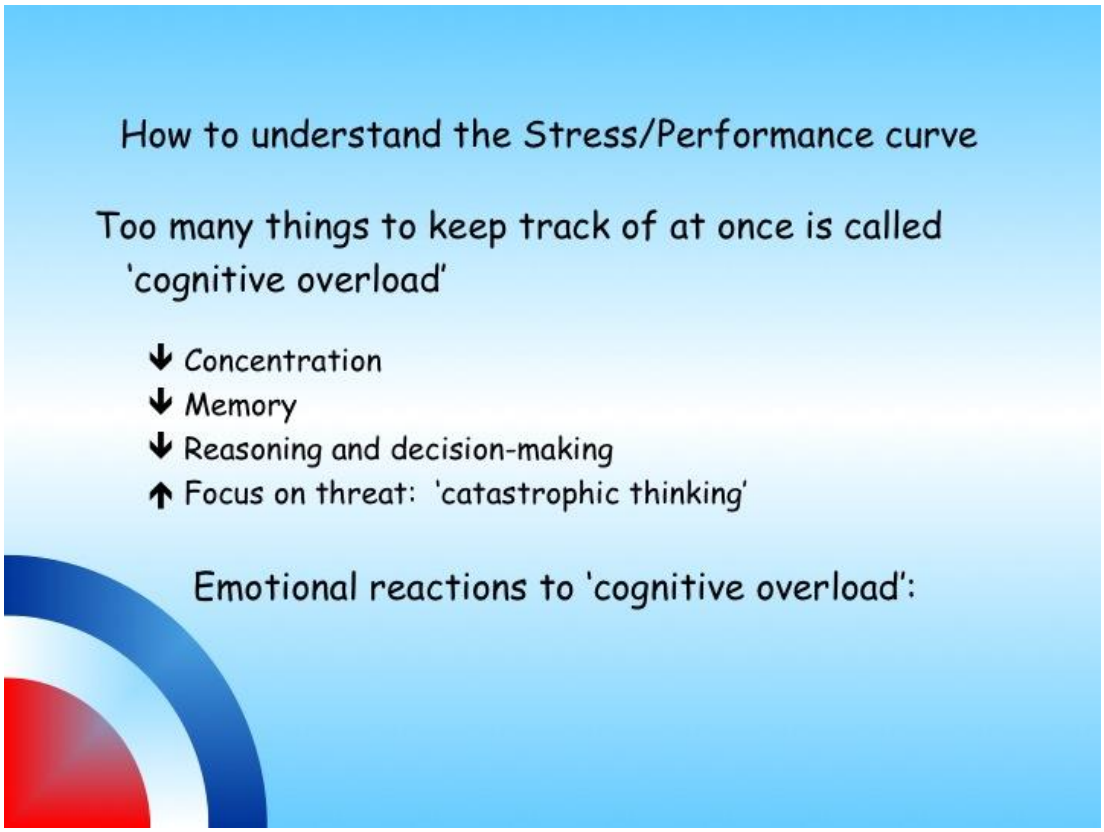


Notes:

Put up whole of slide.
Identify the axis.
All the information you have received so far may make you wonder what damage you are doing to your body and how you can keep going. However, we know that we all need stress in our lives.
Arousal – too little arousal or pressure can produce lethargy. Increasing levels of arousal however improves performance in producing healthy tension and this kind of stress has been termed 'positive stress'.
Ideal stress levels produce normal tension which produces optimum ability to cope or perform. At this amount of pressure our arousal systems are on top performance and we achieve what we set out to do. An example of this is doing an exam. Three months prior to the exam we are often not putting ourselves under any great pressure, however three days before the exam it's a different story! Our concentration is greater, our memory is working at top performance and we are studying for long periods of time to achieve a result.
Distress – If arousal levels are maintained for long periods without stress free periods or effective lifestyle balancing, performance starts to decrease. We are not effectively dealing with excessive arousal or the amount of hormones in our bodies and we start to feel under pressure.
Fatigue – Muscles become fatigued as we maintain anxiousness. This is when we start to make appointments to see health care professionals.

Exhaustion – We sleep a lot or sleep can become generally disturbed. We experience the long-term effects of stress such as tiredness, lack of energy and exhaustion.
Ill health – We start to feel increasingly physically and mentally unwell and can display a number of stress symptoms.
Breakdown – Even one small event can cause a stress reaction at this stage that may seem an overreaction to yourself or others around you (the final straw that breaks the camel's back). You boss asks you to re-do a report and you start crying on his shoulder.
Draw the pint pot on the board!!

PowerPoint slide 13



Notes:

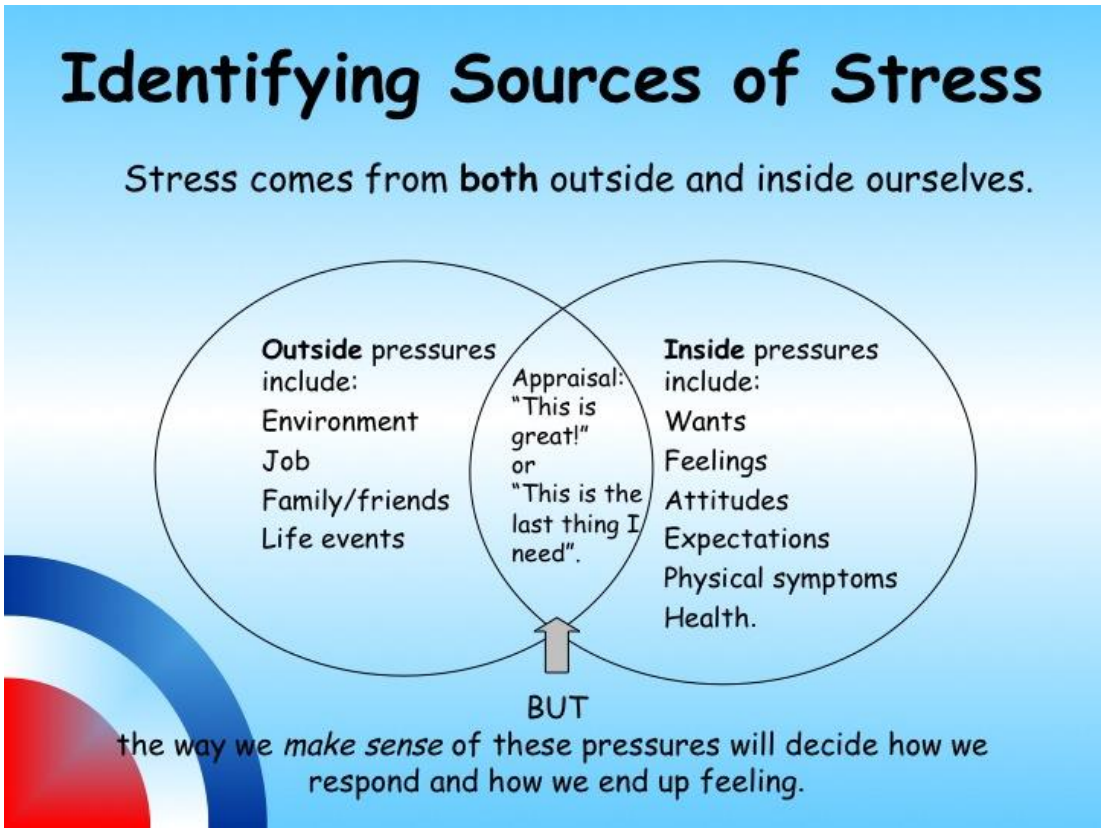
So important things to remember. If you are experiencing too much stress then you will experience cognitive overload. Read slide.

PowerPoint slide 14

Notes:

This slide is a natural break and introduces the causes of stress. Use as an introduction.

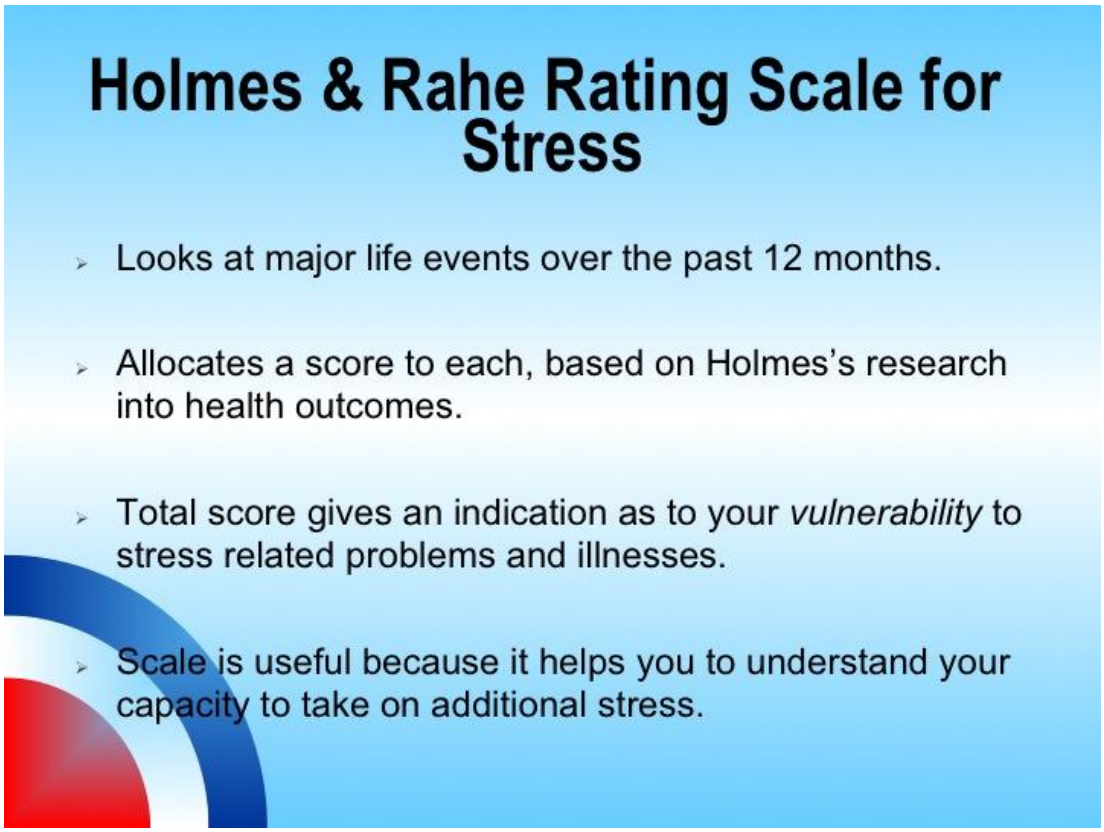
PowerPoint slide 15



Notes:

So now we understand what stress is we need to understand where it comes from. Recognising that we have both internal and external stressors is important. Outside pressures can include our job and the people we work with, it can include the environment, family and friends and anything that is happening in our life at the time. Internal factors can play a part of stress and the pressures that you put upon yourself. The pressure that you put upon yourself at work and even the pressures that you put upon yourself at home can all be a big contributor to stress. But again coming back to that word "perceives". How we view things will determine how we feel and appraisal is an important part which we will cover more in-depth.

PowerPoint slide 16



Notes:

Ask them to find the questionnaire in the folder and fill it out. Encourage them to discuss with others and remind them that we recognise that this is not specifically for a military population but it will act as a guide in identifying common causes of stress.

PowerPoint slide 17

Notes:

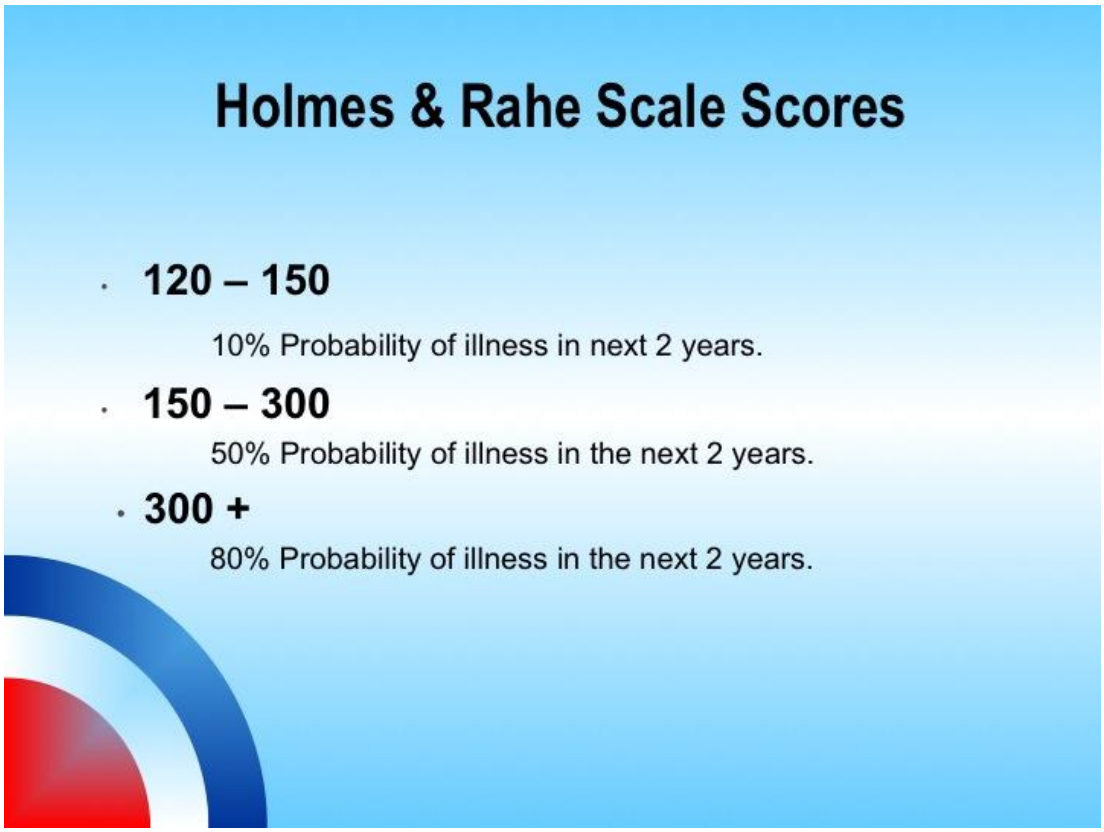
Put up slide to remind people of the questions.

PowerPoint slide 18

Notes:

Encourage healthy discussion within the group regarding individual scores. The chance to introduce humour and engagement with individual personalised scores.

PowerPoint slide 19



Notes:

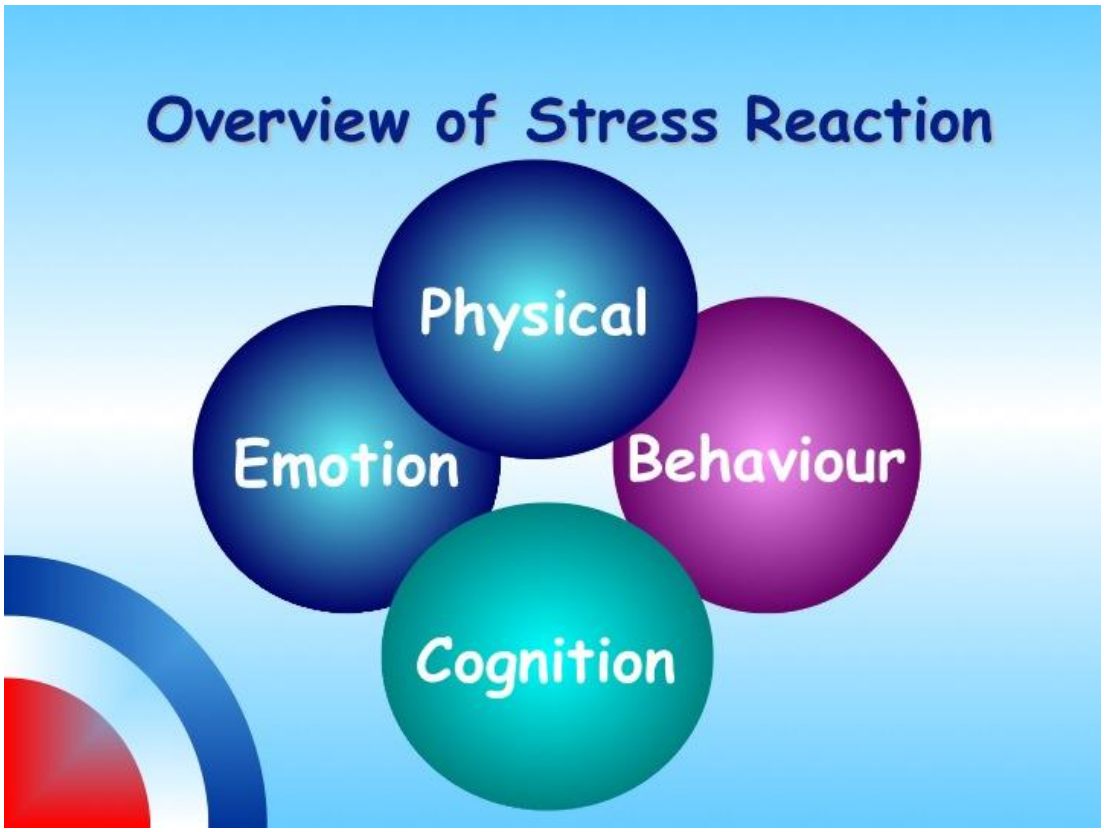
The term illness as used in the questionnaire is very generic. It could mean anything from physical complaints that may require a doctors or nurses appointment, to having prolonged emotional reactions that you feel are unusual for you. The factors that maintain a prolonged stress reaction or cause an illness to develop are: the intensity of the stressor, the duration of the stressor and the number of stressors present at any one time. Also taken into account are the persons coping mechanisms, lifestyle balance, way of thinking and the perception of the situation.

PowerPoint slide 20

Notes:

Another break to introduce the consequences of stress reactions.

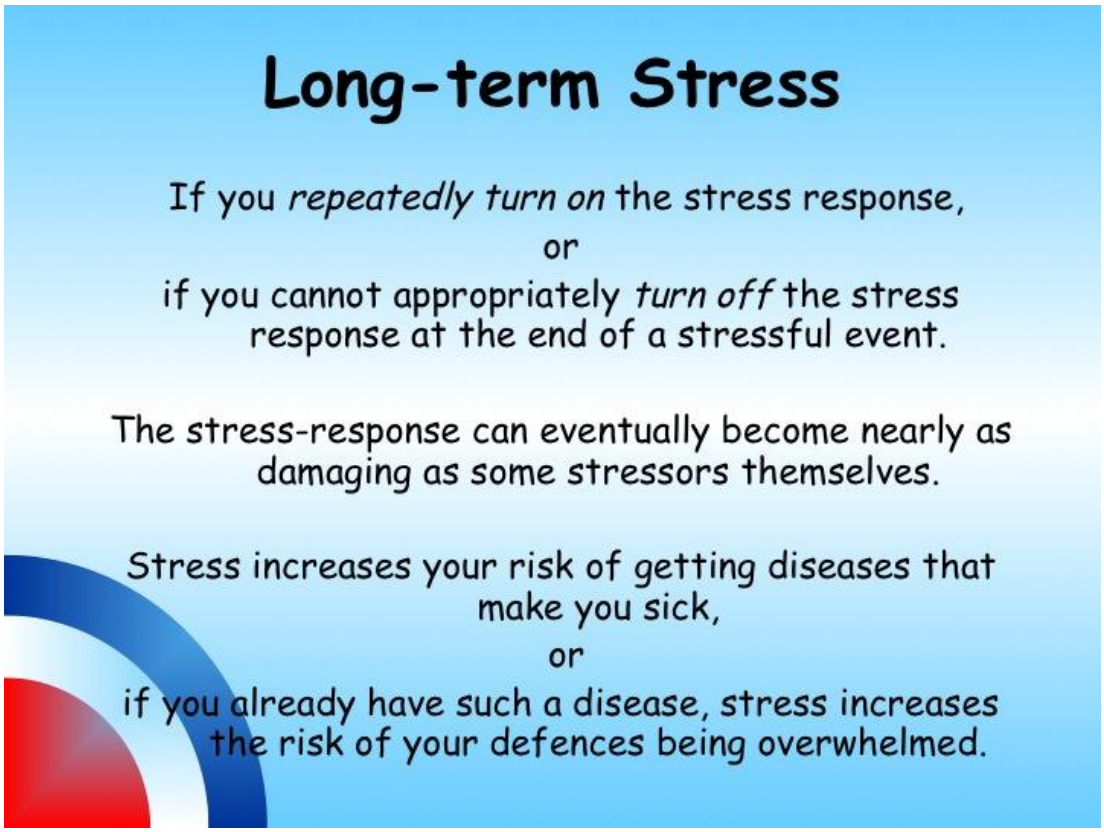
PowerPoint slide 21



Notes:

Explain basic concept of CBT. Best draw up diagram with arrows on white board as this is easier to understand. Use example when discussing this. An example is having a bad morning and how it can effect the rest of your day.

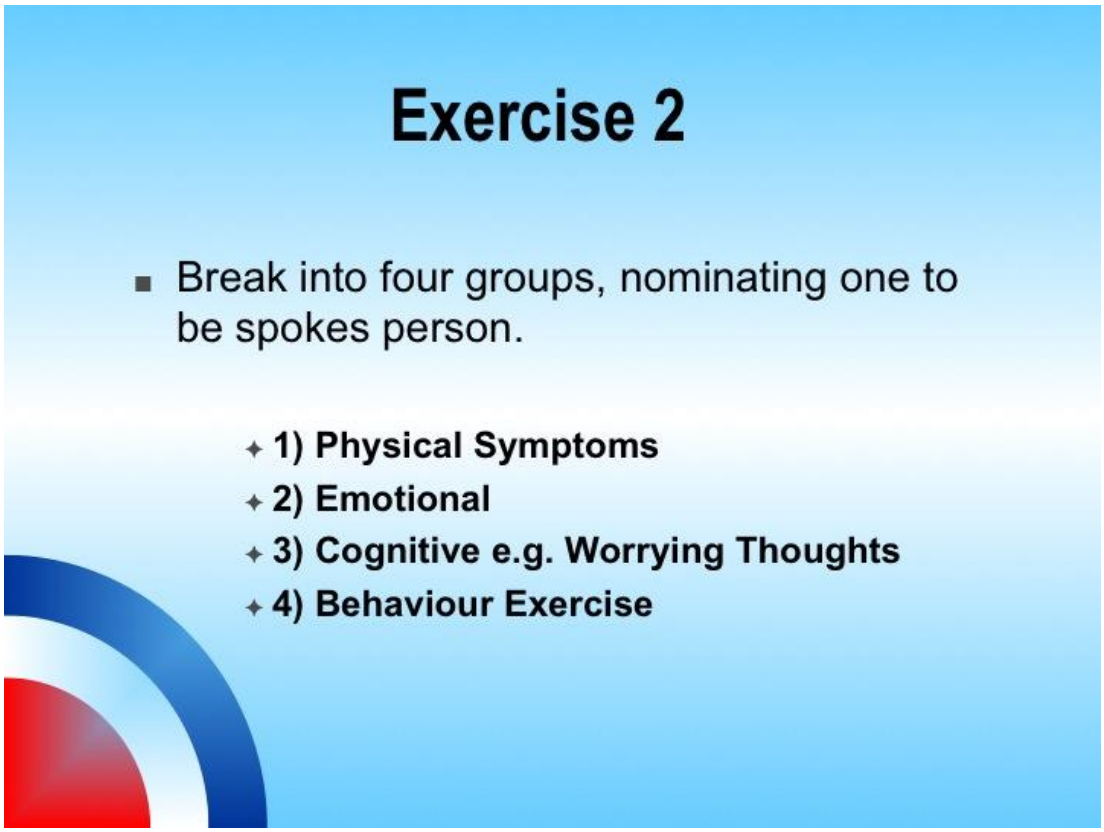
PowerPoint slide 22



Notes:

Read slide. Emphasis the importance of developing the ability to turn off the stress response and reasure that we will be covering this in the afternoon.

PowerPoint slide 23



Notes:

Break back into previous group and provide pens and paper.

Explain this is another brain storming session and if there are 4 groups give them each one of the headings above.

Hold up sheet and get them to feedback. Expand on their feedback.

Again another opportunity to relate back to the “pint pot”.

PowerPoint slide 24

Notes:

Read through slide.

PowerPoint slide 25

Notes:

Read through slide.

PowerPoint slide 26

Notes:

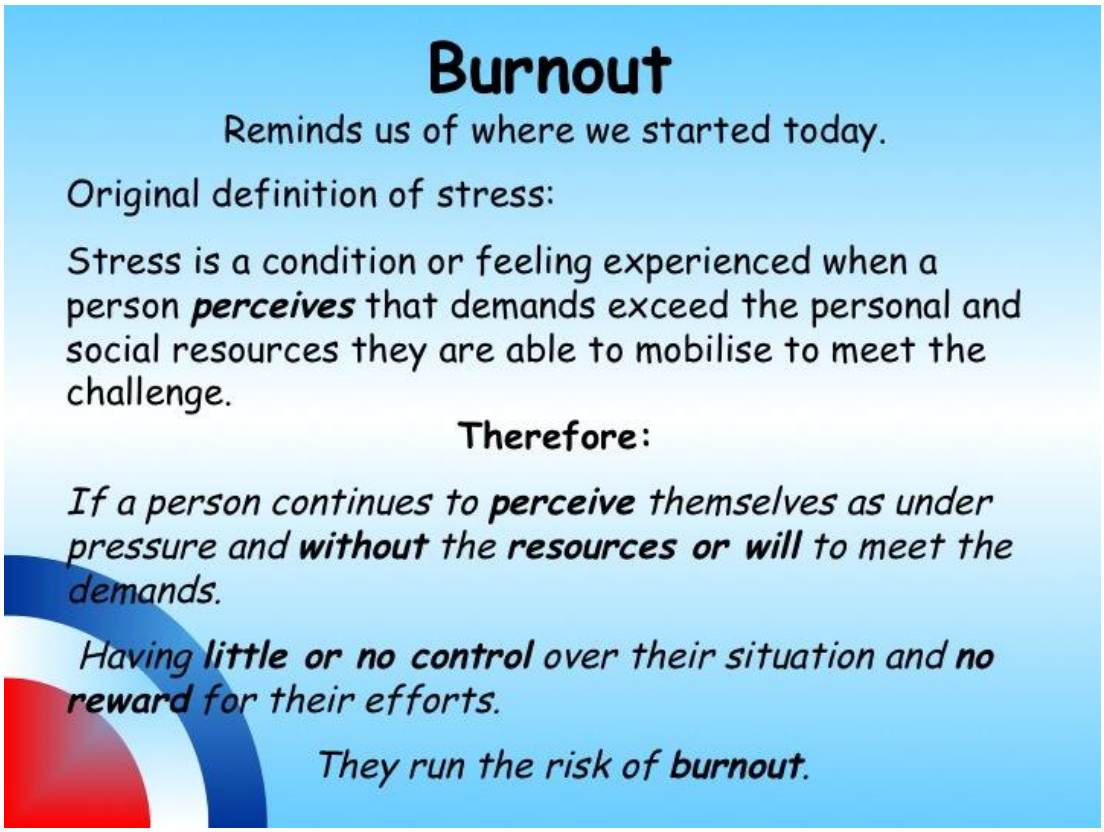
Read through slide.

PowerPoint slide 27

Notes:

Read through slide.

PowerPoint slide 28



Notes:

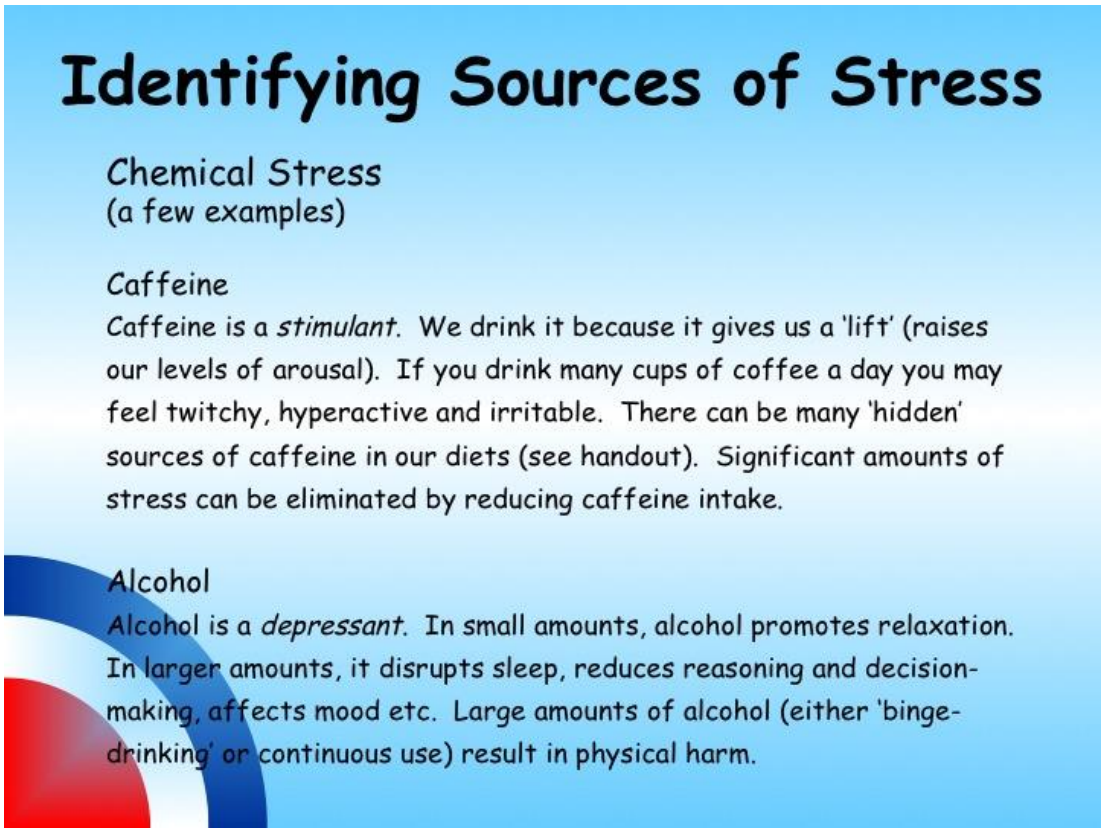
Introduce concept of Burnout.

Read slide again putting emphasis on the word “perceives”.

Referring back to what was said before…

Even one small event can cause a stress reaction at this stage that may seem an overreaction to yourself or others around you (“the final straw that breaks the camel’s back”). You boss asks you to re-do a report and you start crying on his shoulder. This could be demonstrated at home by screaming at the children for running in front of the television when you are watching it or shouting at your partner after a perceived criticism.

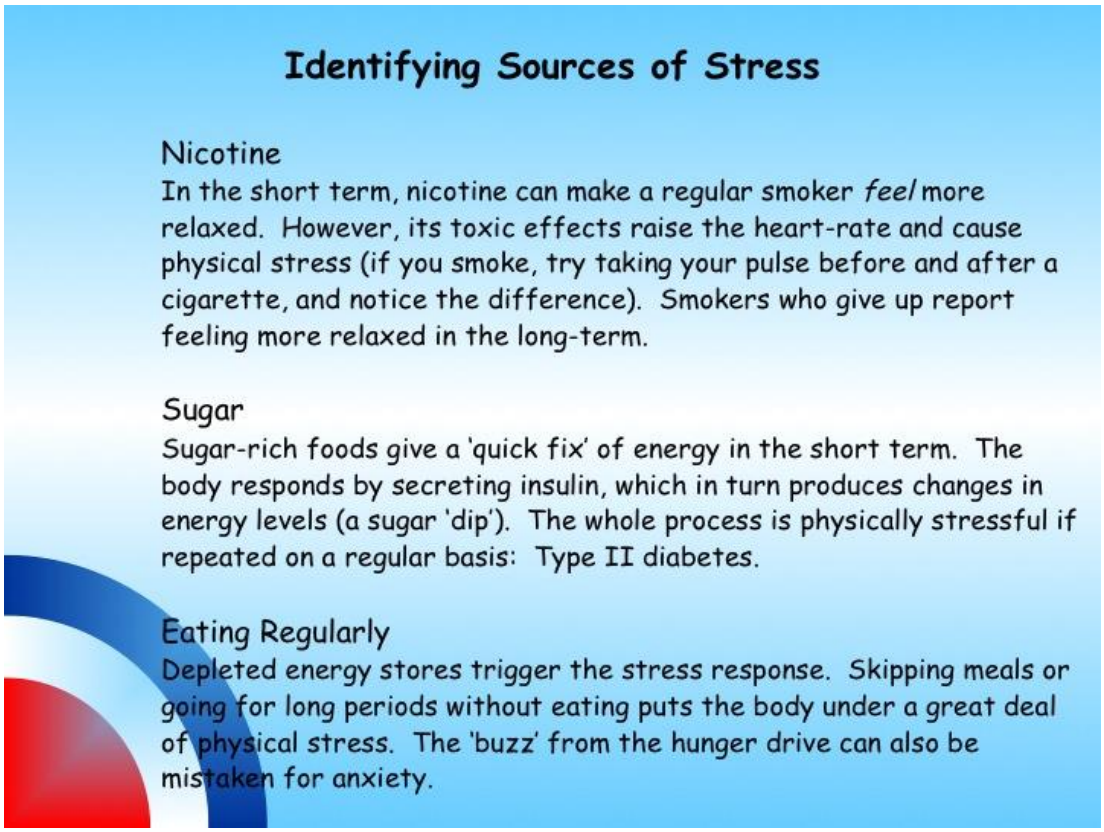
PowerPoint slide 29



Notes:

Read through the slide and expand on each point with examples.

PowerPoint slide 30



Notes:

Other sources of stress.

Read through slide and expand.

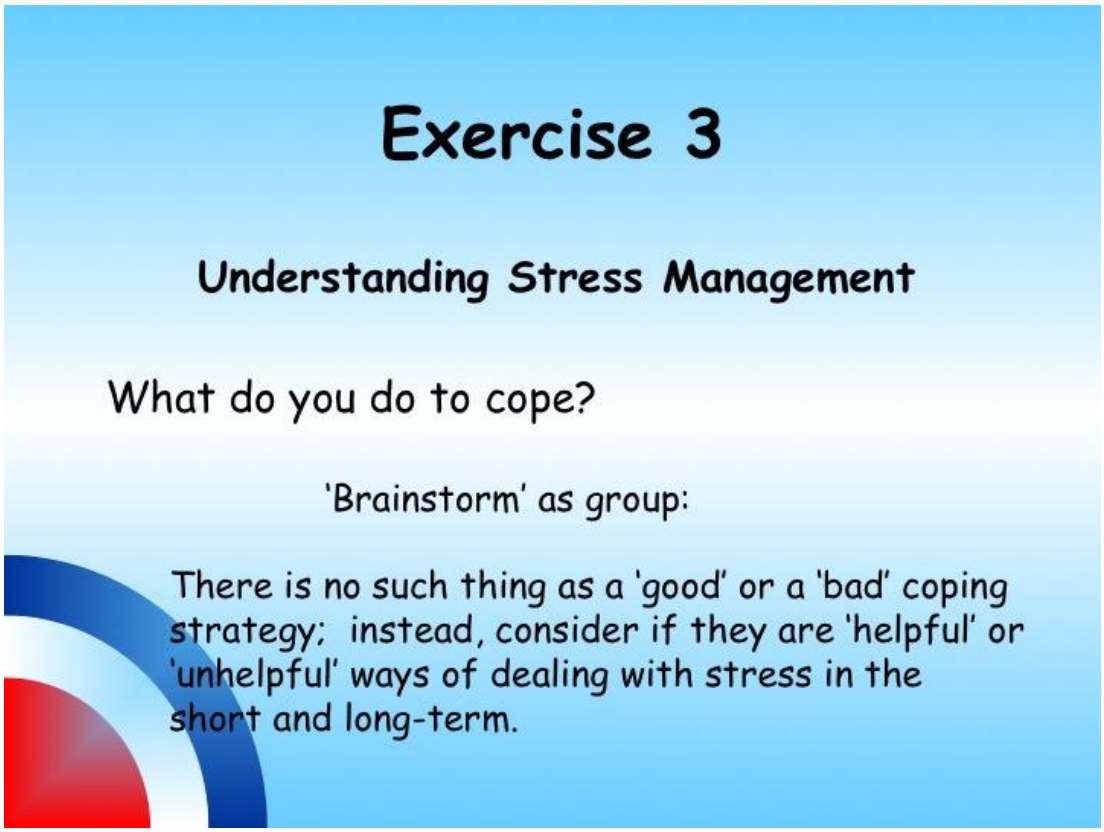
PowerPoint slide 31

Notes:

Show the DVD which gives a visual example of how stress affects individuals.

Break for lunch.

PowerPoint slide 32



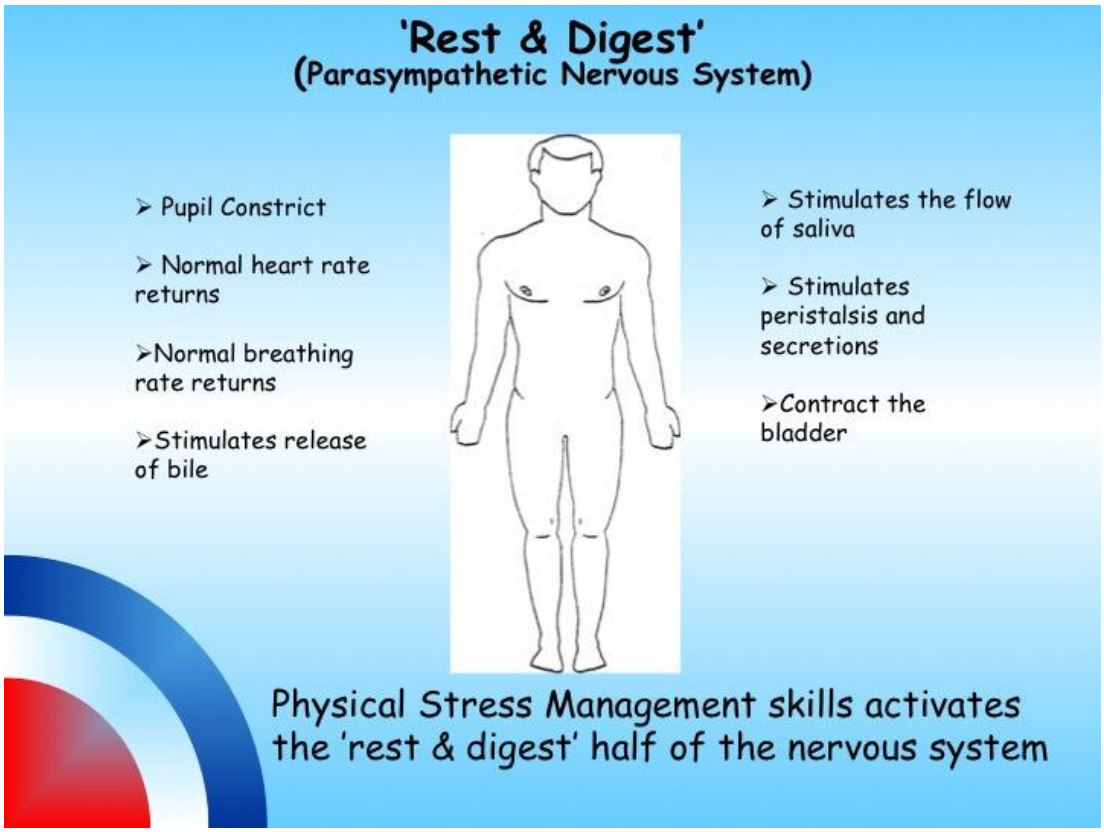
Notes:

Welcome back after lunch.

Write on white board their ideas. Discuss the difference between maladaptive and adaptive coping strategies. DON'T REFER TO THEM AS GOOD OR BAD. To get the ball rolling put some of you own down for example shopping!!

Go through their ideas and discuss further

PowerPoint slide 33



Notes:

Introduce this as the opposite to fight or flight. Introduce the idea that we have 2 automatic systems in our body. Fight or flight and rest and digest. These 2 systems may get out of synch and therefore the aim of relaxation is to bring out the rest and digest system. Go through slide as previously with the fight of flight slide.

Pupil Constrict – as identified in the fight or flight and vision clears.

Normal heart rate returns – so you don't have that pounding feeling in your chest and it is now longer pushing the oxygen to you muscles in preparation to fight or run away.

Normal breathing rate returns – for very much the same reason just mentioned. It's your body returning back to its normal function.

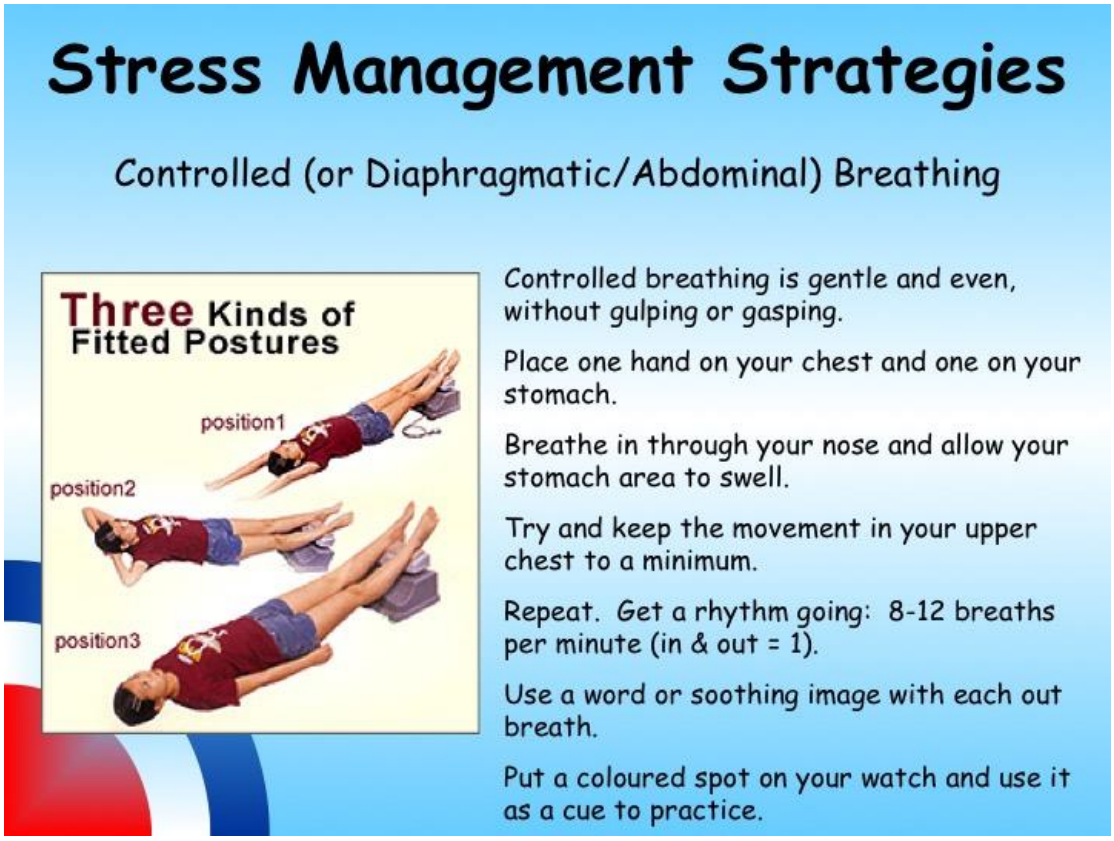
Stimulates release of bile – Your stomache begins digesting food again because if you remember it stopped in the fight or flight mode as it was not deemed a vital part in keeping you safe.

Stimulates the flow of saliva – Again your body returning to its normal functions
Stimulates peristalsis and secretions – the wave motion in our intestines returns.

- Contract the bladder – and finally we don't feel as if we need to go to the loo all the time.

- So as you can see these are they bits that our body does when it feels safe and does not perceive a threat. I image it is what most of you are experiencing right now. Your body just ticking along doing what its meant to be doing.

PowerPoint slide 34



Notes:

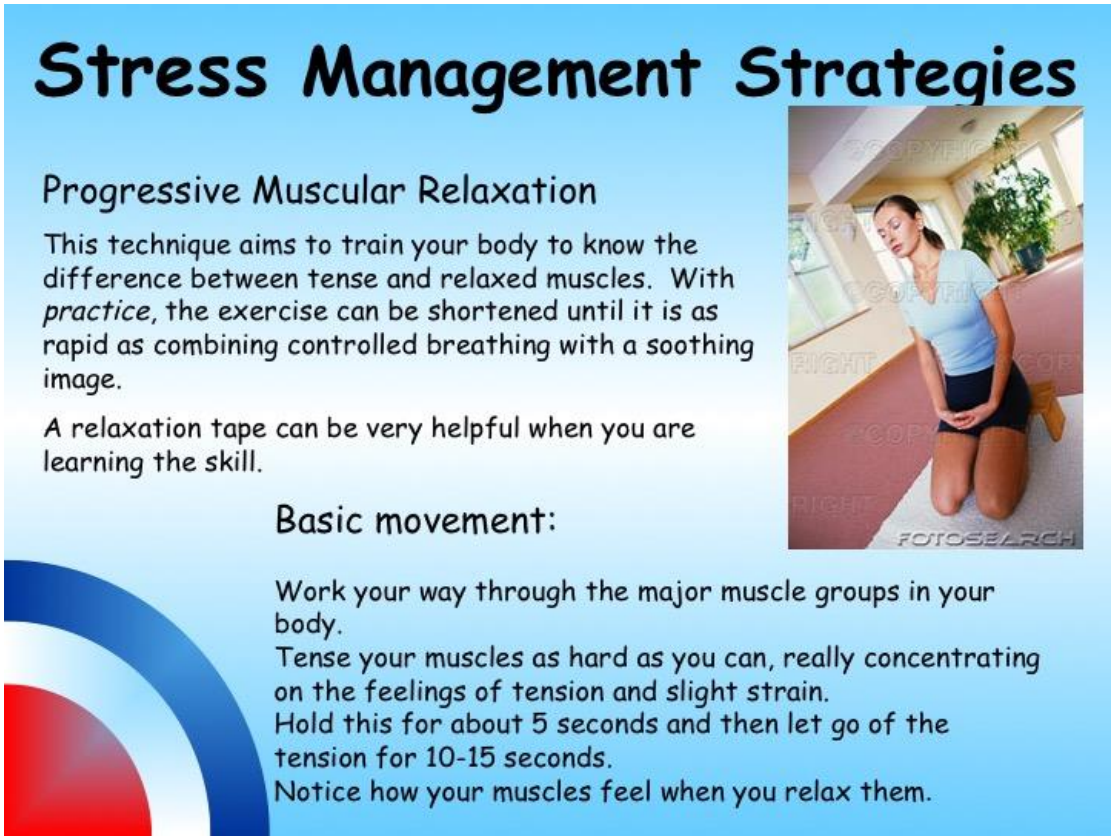
Number 1 of the stress management techniques.

Ask if anyone has done this before.

Talk about the benefits and how it forces the rest and digest system to come out so therefore forcing the fight or flight mode to go away.

Demonstrate and practice!! Get them to take their pulse prior and after and see if there is any difference. Best to work on the count of 3. So breathe in through the nose for 3 and out through the mouth for 3.

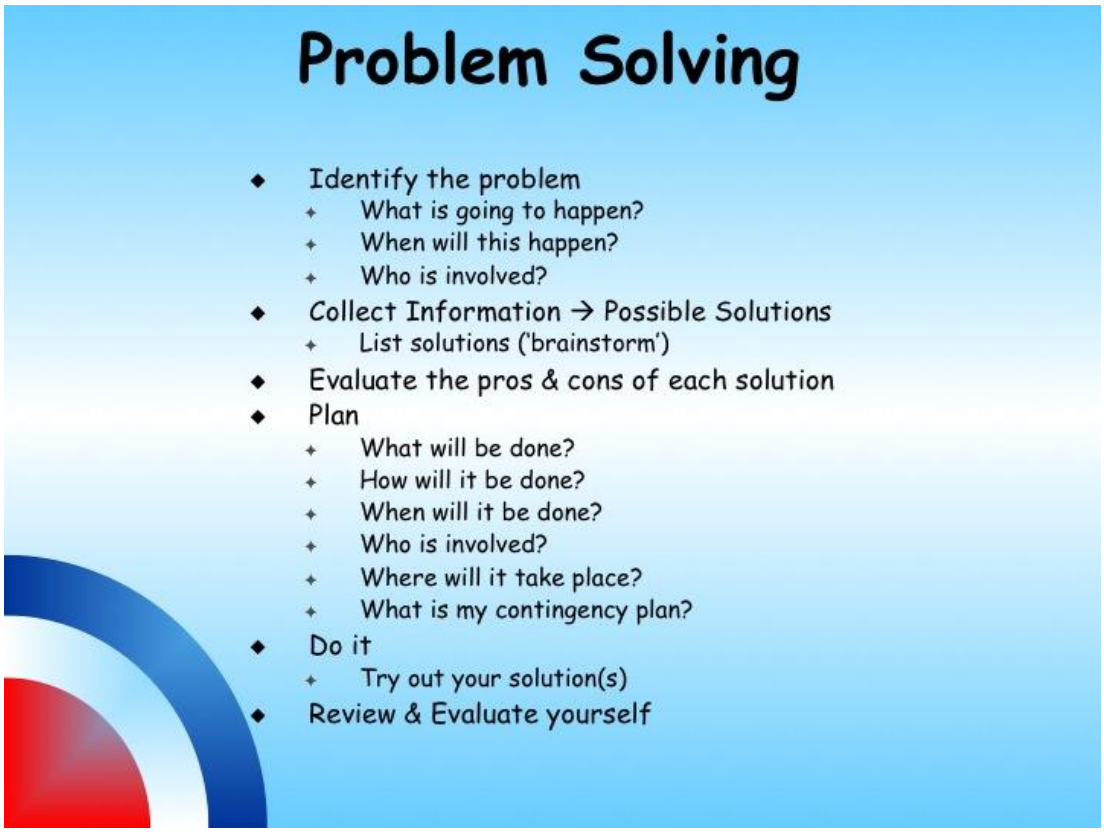
PowerPoint slide 35



Notes:

Again explain what this is and the positive effects it has – Regulates breathing having a similar effect to the diaphragmatic breathing, it is a distraction and it also helps you recognise when your muscle are tense and gives you the skill of relaxing them as we have already mentioned that we tend to hold our stress in our shoulders and neck. We will be practicing this at the end of the day and we have relaxation CD's to give out.

PowerPoint slide 36



Notes:

Ask if anyone makes lists? Explain that that is a form of problem solving and it helps organise and prioritise what you need to do and this is very much along the same lines.

Talk through the slide possibly suggesting a problem so they can see how the process works for example fighting over who does the dishes!

Recap – so far we have covered breathing, relaxation and now we have introduced you to problem solving.

PowerPoint slide 37

Notes:

Read through slide.

PowerPoint slide 38

Notes:

Introduces humour into presentation.

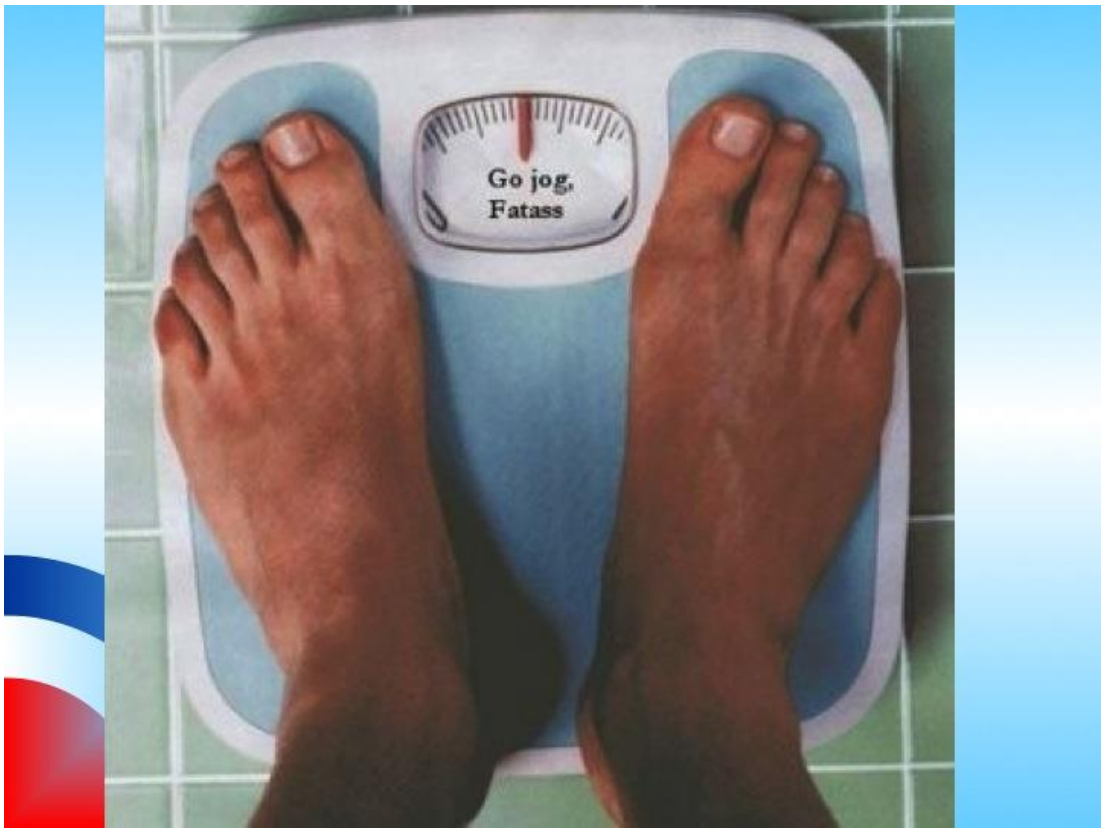
PowerPoint slide 39

Notes:

Read through slide.

Mention how when we become stressed our hobbies and personal interests are usually the first thing that we drop as we believe that we no longer have time for these activities or we don't see them as important enough. They are very important as these are what keep our lives balanced and what keeps us well.

PowerPoint slide 40



Notes:

Introduce some more humour.

PowerPoint slide 41

Notes:

Read through slide.

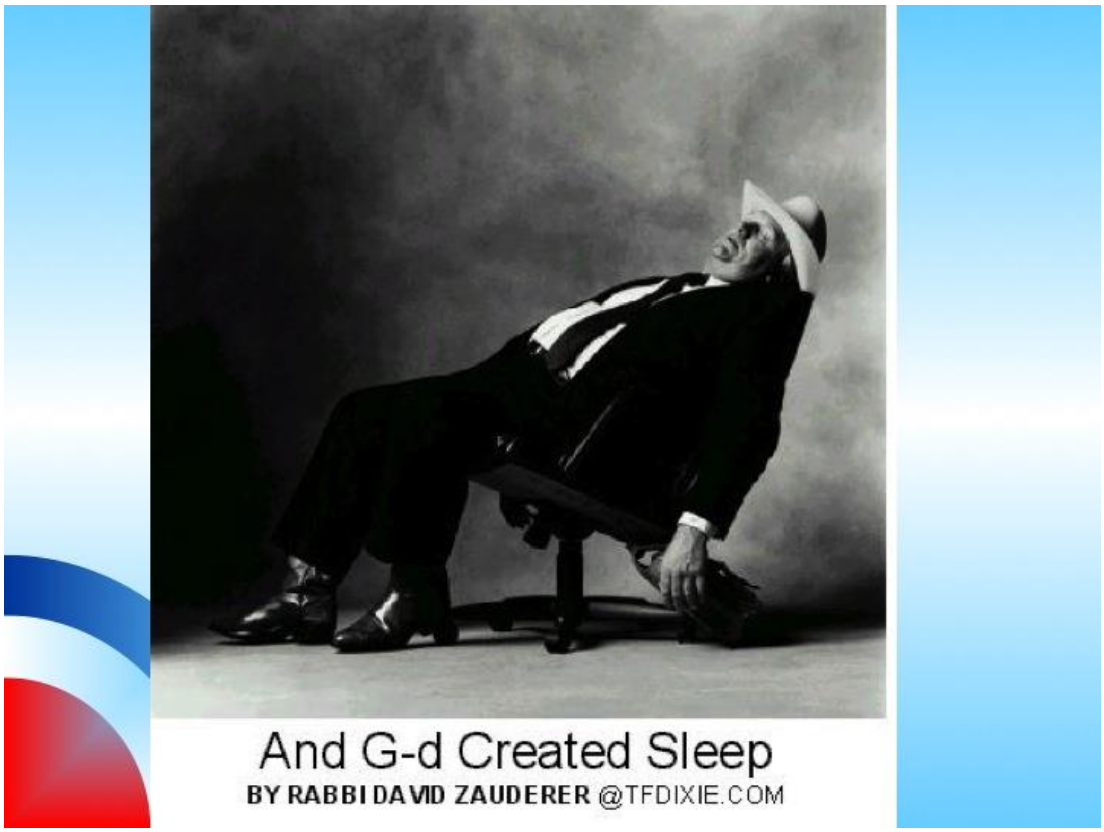
Discuss how exercise is clinically proven to help with people with depression and how it releases endorphins into the body and this is what gives us that "buzz". Also discuss it can help with motivation. Mention that in order to start going to the gym or doing more exercise sometimes it is better to do it with someone else as we have the added pressure of going because you don't want to leave your gym buddy on their own.

PowerPoint slide 42

Notes:

This is about finding a sense of community or belonging. Use the RAF as an example. It's about being apart of something that is bigger that you. Again use example of football fan and state how this often closely ties in with enjoyment and leisure.

PowerPoint slide 43



Notes:

Add in a bit of humour.

PowerPoint slide 44

Notes:

Read through slide. Discuss sleep hygiene technique and state that we have some patient information if they would like it at the end of the day.

PowerPoint slide 45

Notes:

Add in another bit of humour.

PowerPoint slide 46

Notes:

Read through slide. Refer back to the small introduction to CBT that you gave.

PowerPoint slide 47

Notes:

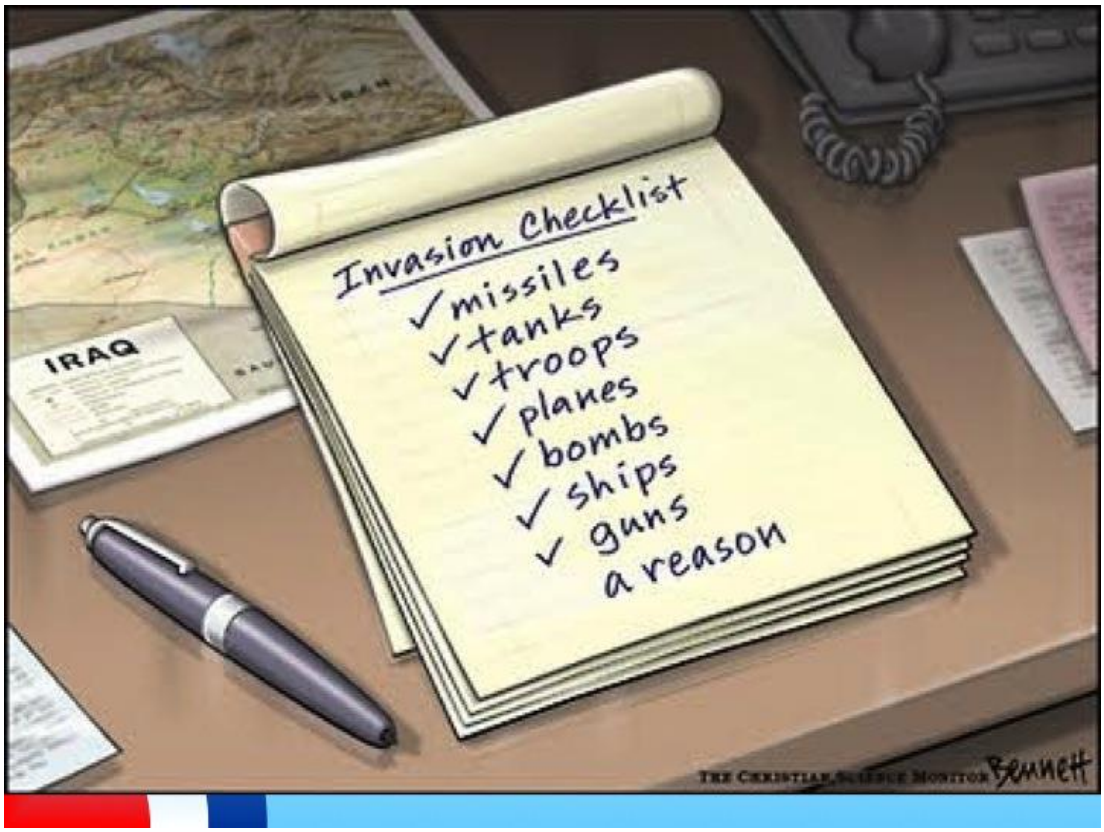
Add in a bit of humour.

PowerPoint slide 48

Notes:

Read through slide and emphasise how important diet is and how it can affect our mood. Refer back to the chemical stressor and the sugar rush. Mention the GI diet and slow releasing energy foods. Importance of eating regularly.

PowerPoint slide 49



Notes:

Add in another bit of humour.

PowerPoint slide 50

Notes:

Read through slide.

PowerPoint slide 51

Notes:

Get them to do their own lesson plan. Go and speak to them whilst they are completing this and offer advise to those that need it.

PowerPoint slide 52

Notes:

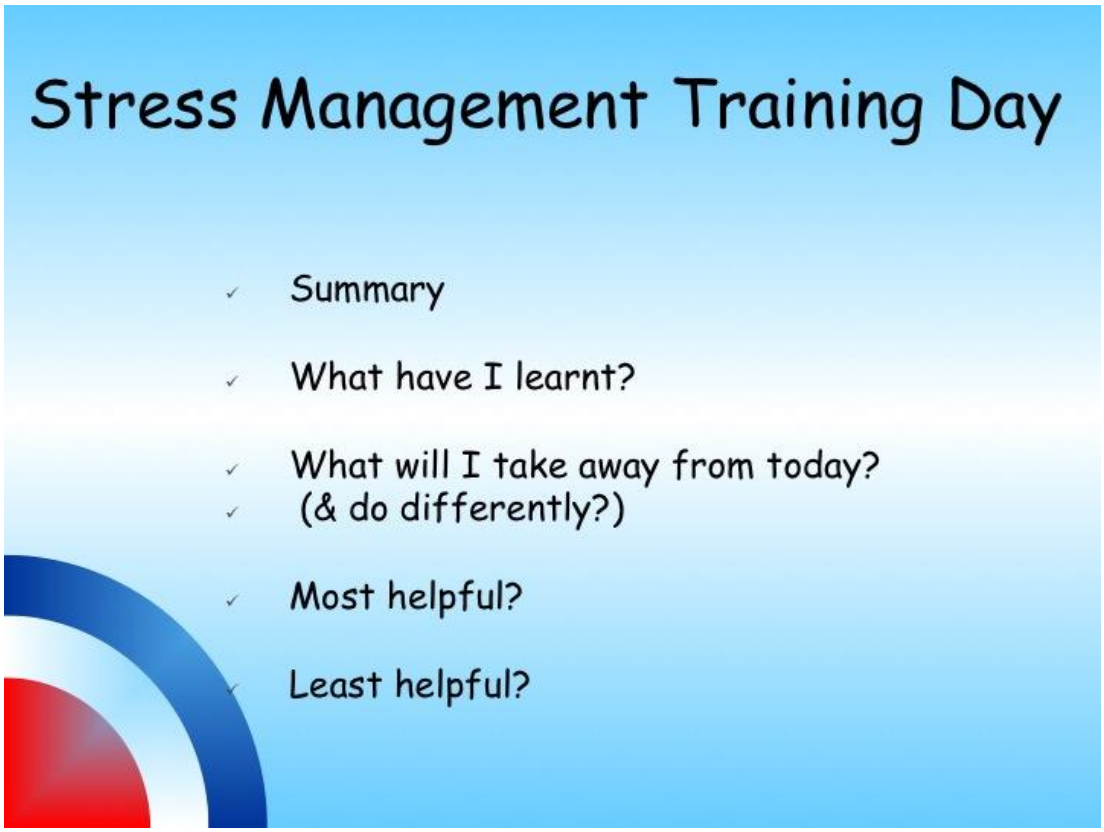
Summarise their personalised action plan.

PowerPoint slide 53

Notes:

Ask them to get the relaxation mats and black out the room. Put on the relaxation CD.

PowerPoint slide 54



Notes:

That's it!

Ask if they have any questions.

Ask if they could fill out the feedback questionnaire.

And thank them for a lovely day and hope they got some benefit of being here.

Annex F: STRESS MANAGEMENT DAY (SMD) DCMH RAF BRIZE NORTON - FEEDBACK FORM

Please take a few moments to fill this in before you leave:

I found the information and joining instructions to be of good quality:

☐ ☐ ☐ ☐ ☐
Agree Disagree

I found the venue for the SMD to be satisfactory:

☐ ☐ ☐ ☐ ☐
Agree Disagree

I found the format of the SMD to be satisfactory:

☐ ☐ ☐ ☐ ☐
Agree Disagree

I found the content of the SMD to be satisfactory:

☐ ☐ ☐ ☐ ☐
Agree Disagree

Suggestions for improvement:

Thank You

Annex G: SOCIAL READJUSTMENT RATING SCALE (SRRS)

Death of spouse	100
Divorce	73
Marital separation	65
Jail term	63
Death of close family member	63
Personal injury and illness	53
Marriage	50
Fired at work	47
Marital reconciliation	45
Retirement	45
Change in family members health	44
Pregnancy	40
Sex difficulties	39
Addition to the family	39
Business readjustment	39
Change in financial state	38
Change in number or arguments with spouse	35
Taking out a large mortgage or loan	31
Foreclosure on mortgage or loan	30
Change in work responsibilities	29
Son or Daughter leaving home	29

Trouble with in-laws	29
Outstanding personal achievement	28
Spouse begins or stops work	26
Starting or finishing school	26
Change in living conditions	25
Revision of personal habits	24
Trouble with boss	23
Change in work hours or conditions	20
Change in residence	20
Change in school	20
Change in recreational habits	19
Change in Church activities	19
Change in social activities	18
Taking out a small mortgage or loan	17
Change in sleeping habits	16
Change in number of family gatherings	15
Change in eating habits	15
Holiday	13
Christmas season	12

TOTAL